

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Review of Regulatory Requirements for
Incumbent LEC Broadband
Telecommunications Services

CC Docket No. 01-337

DECLARATION OF LEE L. SELWYN

Introduction and Summary

Lee L. Selwyn, of lawful age, declares and says as follows:

1. My name is Lee L. Selwyn; I am President of Economics and Technology, Inc. (“ETI”), Two Center Plaza, Suite 400, Boston, Massachusetts 02108. ETI is a research and consulting firm specializing in telecommunications and public utility regulation and public policy.

2. I have participated in numerous proceedings before the Federal Communications Commission (“FCC” or “Commission”) dating back to 1967 and have appeared as an expert witness in hundreds of state proceedings before more than forty state public utility commissions. My Statement of Qualifications is annexed hereto as Attachment 1 and is made a part hereof.

3. In their effort to obtain “non-dominant” status with respect to DSL and other “broadband” services,¹ the ILECs claim to have achieved only minimal success in their efforts to penetrate what they portray as the cable-dominated broadband market. No quantitative demonstration is offered in support of these contentions. Instead, the ILECs focus almost entirely upon the residential marketplace where cable television operators offer what is described, in relativistic terms, as “high-speed Internet access” via “cable modem” services. With respect to the residential market, which the ILECs portray as highly competitive, their story can be boiled down to two claims:

- (1) The current level of “broadband” penetration is so low (less than 10% overall) that nobody could be said to “dominate” it; and
- (2) The ILECs’ share of this small overall demand is only about 30%.

This highly disingenuous focus upon the current state of this market ignores both the *reasons* for the small overall penetration level and the apparently small ILEC share, and sidesteps entirely

1. The precise definition of “broadband” has not been established. *In the Matter of Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, CC Docket No. 01-337, Notice of Proposed Rulemaking, rel. December 20, 2001 (“Notice”), at para. 17, note 37. Consumer-oriented ADSL services provide bandwidths in the range of 96 to 256 kbps in the upstream direction and 512 kbps to 1.544 mbps in the downstream direction. These services are most often used to provide “high-speed” access to the Internet over conventional subscriber line facilities. They are not capable of supporting high bandwidth applications such as broadcast quality video.

the market conditions that are likely to prevail as the demand for “broadband” services matures. The ILECs portray their seemingly small share of the residential “high-speed Internet” market as resulting from affirmative choices by consumers among competing alternatives, when in fact individual consumer decisions as between the ILECs’ ADSL services and the cable companies’ cable modem services were, for the most part, made by default, in that at the time the customer elected to obtain “high-speed Internet access” only one of these offerings was available at the customer’s location.

4. In fact, the ILECs have provided no credible demonstration that their pervasive dominance of the local telephone service market — particularly in the residential sector — will not result in their ultimate and unchallenged dominance of the “broadband” services market as well. Indeed, there is simply no basis upon which the Commission can conclude otherwise given the infancy of this market at this time. CLECs (more specifically, so-called “Data CLECs” or “DLECs”) have been singularly unsuccessful in developing viable and sustainable business plans in reliance upon ILEC *wholesale* services. The market landscape is littered with the corpses of the Rhythms, the NorthPoints, the HarvardNets, and numerous others that have tried.

5. In this declaration, I identify the numerous discrepancies between the claims being advanced here by the ILECs on the one hand, and marketplace facts as reported by various industry sources and, in many cases, by the very same ILECs in communications with their shareholders and the financial community generally. I also address the flawed methodology being relied upon by SBC Declarants Crandall and Sidak to define the relevant product and

geographic markets, which ultimately lead to their bogus conclusions regarding ILEC market power in the broadband services market.²

I. ILECs not only possess enormous competitive advantages in the broadband services market, they have also failed to demonstrate the need for non-dominant status as a basis for deploying broadband services.

6. An examination of whether ILECs possess market power in the provision of broadband services must first begin by addressing the fact that, unlike any other potential provider of such services, the ILECs alone possess a stock of physical and financial resources that can be committed to the provisioning, development, and deployment of both wholesale and retail broadband services. ILECs own and manage a ubiquitous telecommunications network that reaches nearly every household and business location in the country, a resource whose costs were underwritten by captive telephone service ratepayers under protected monopoly franchises. The existence of this publicly-funded legacy infrastructure provides the ILECs with an enormous head-start advantage vis-a-vis entrants. Even the closest rivals in the race for broadband deployment, the cable television operators, have never enjoyed the same level of government protection and have never achieved the same level of ubiquity as have ILEC networks. Some 34% of households are not passed by upgraded cable systems capable of providing cable modem

2. SBC Petition for Expedited Ruling that it is Non-Dominant in Its Provision of Advanced Services and for Forbearance from Dominant Carrier Regulation of Those Services, October 3, 2001 ("*SBC Petition*"), Attachment 1, Declaration of Robert W. Crandall and J. Gregory Sidak, dated October 1, 2001 ("*Crandall/Sidak Declaration*").

service;³ these customers, together with the overwhelming majority of business locations, have only an ILEC “last mile” telecommunications network connection.

7. The ILECs tirelessly assert that “non-dominant” status is necessary to provide them with the financial incentives for investment in broadband. Incredibly, they claim, on the one hand, that there is sufficient competition today in broadband services to warrant non-dominant status, while contending, on the other hand, that without *ILEC* involvement in this market, the nation will be denied the benefits of a broadband telecom infrastructure altogether. These patently inconsistent and contradictory claims hardly justify the fundamental dismantling of the existing regulatory process that the ILECs here seek. Moreover, the contention that “non-dominant” carrier status will drive broadband investment is also belied by the fact that ILECs have *already* deployed and are continuing to deploy these services *under the existing regulatory paradigm*. In direct contrast to their statements to regulators (as in the their initial comments in the instant proceeding), ILECs continue to herald their broadband deployment and development achievements to their investors in quarterly and annual reports and various other press and securities analyst briefings. Verizon, for example, boasts that it “has deployed DSL to central offices serving 79 percent of the company’s access lines” and that “[o]perational improvements

3. Only 70-million of the 105.4-million US television households are passed by cable modem-ready facilities. *Industry Statistics*, National Cable & Telecommunications Association, available at http://www.ncta.com/industry_overview/indstat.cfm?indOverviewID=2 (accessed April 19, 2002).

have reduced DSL installation intervals from 15 to 8 days.”⁴ Similarly, BellSouth touts the advantages of DSL over cable modem service:

“[i]t’s difficult to know for sure what it is about DSL that customers like so much. It must have a lot to do with the superfast downloads of files and Web pages. It might well be that a DSL broadband connection is always on, meaning that you don’t have to ‘dial up’ every time. Being able to talk on the same telephone line you’re using to surf the Internet certainly is a great feature. Or is it the dedicated connection between your PC and the BellSouth central office - which means, unlike cable modems, you don’t have to share bandwidth with you neighbors? (Hint: all of the above).”⁵

In fact, the RBOC broadband customer base has grown exponentially over the past year: SBC, Qwest, Verizon, and BellSouth have increased their high-speed Internet/DSL customer bases by 69 percent, 74 percent, 122 percent, and 189 percent, respectively, from year-end 2000 to year-end 2001.⁶ SBC alludes to future growth trends by stating that it

4. Verizon *Investor Quarterly*, Fourth Quarter 2001, at 4, available at <http://investor.verizon.com/annual/VZ/4Q2001> (accessed April 16, 2002).

5. BellSouth *2001 Annual Report*, at 11, available at http://investor.bellsouth.com/ireye/ir_site.zhtml?ticker=BLS&item_id='reports.htm'&script=11905 (accessed April 16, 2002).

6. SBC *Investor Briefing*, Fourth Quarter 2001, January 24, 2002, at 2, available at http://www.sbc.com/investor_relations/financial_and_growth_profile/investor_briefings/0,5931,101,00.html (accessed April 16, 2002); *Qwest Communications Reports Fourth Quarter, Year-End 2001 Results*, Qwest, January 29, 2002, at 1, available at http://media.corporate-ir.net/media_files/NYS/q/q_1_28_02earnrel.htm (accessed April 9, 2002); Verizon *Investor Quarterly*, Fourth Quarter 2001, at 4; BellSouth *2001 Annual Report*, at 6.

...believes that long-term data growth trends will continue to be strong as small- and medium-sized businesses will join enterprise customers in adopting richer applications, migrating to higher speeds, and placing an increased emphasis on security and high levels of reliability. With this fundamental demand as a foundation, SBC has achieved steady sequential growth in data transport revenues every quarter over the past two years. For the full year 2001, SBC's data transport revenues grew 20.0 percent."⁷

8. Strong increases in DSL subscribership are linked, in part, to focused marketing efforts by the Regional Bells. As indicated in their investor-relations materials, some RBOCs have pursued customer-installation techniques, aggressive marketing strategies via business alliances, and the development of marketing models to target potential customers. For example:

- Both SBC and BellSouth have developed and implemented DSL infrastructure that can be self-installed by the customer with such success that they will undoubtedly continue to pursue this venture.⁸
- In addition to gaining 146,000 DSL Internet subscribers in the fourth quarter of 2001, SBC reported "a first-of-its-kind alliance with Yahoo to introduce cobranded, customized high-speed DSL Internet services for consumers in SBC's 13-state region in mid-2002."⁹
- In pursuit of greater market share, BellSouth has "created a proprietary marketing model that assigns every potential DSL customer a 'propensity to buy' score from zero to 1,000. Scores in the 'sweet spot' above 600 correlate with increased demand for high speed Internet service. The key to deploying broadband effectively is to upgrade the network

7. SBC *Investor Briefing*, Fourth Quarter 2001, at 4.

8. SBC *Investor Briefing*, Fourth Quarter 2001, at 5 and BellSouth *Investor News*, Fourth Quarter 2001, at 8, available at http://bellsouth.com/investor/pdf/4q01p_news.pdf (accessed April 16, 2002).

9. SBC *Investor Briefing*, Fourth Quarter 2001, at 5.

facilities, called remote terminals, that serve areas with high propensity to buy scores. This is a good example of BellSouth's pragmatic, demand-based capital deployment."¹⁰

Thus, despite their repeated claims to the contrary to both the FCC and Congress, the RBOCs have flourished within the current confines of broadband regulation.

9. In their representations to the FCC and to Congress, the RBOCs portray themselves and their DSL service as falling behind in the race to wire the broadband nation; in so doing, they hold the cable modem providers up as the clear "dominant" provider, due to the alleged ubiquity of cable networks and the ability of cable companies to attract customers.¹¹ The argument that cable modem providers present a serious threat to the RBOCs' own growth in the broadband services market is belied by the fact that at least one Bell company, by its own account, has enjoyed considerable success against its cable rivals. In its Fourth Quarter *Investor News*, BellSouth advises that in July-August 2001, "DSL flow share in the BellSouth region versus cable modem was 46%, compared to 28% flow share the year before. *BellSouth has met the cable competition head-to-head, and our flow share has significantly increased.*"¹²

10. The ILECs' preposterous contention that *their* refusal to deploy broadband facilities (if non-dominant status is not granted) will deny the nation a broadband infrastructure provides the

10. BellSouth *Investor News*, Fourth Quarter 2001, at 11.

11. Crandall/Sidak Declaration, at paras. 44, 60-61.

12. BellSouth *Investor News*, Fourth Quarter 2001, at 4.

most compelling reason why the ILECs must continue to be treated as dominant monopolies: If no other entity is even capable of building a broadband infrastructure absent the ILECs' investment, then clearly the competitive supply elasticity for broadband services must be at or near zero.¹³ Such a condition serves only to confirm the enormous market power retained by incumbent local exchange carriers,¹⁴ due in large part to the substantial and ubiquitous embedded ILEC infrastructure already built and paid for by monopoly ratepayers.

11. It is simply too early to tell whether acceding to the ILECs' demands for non-dominant, deregulated status will work to support or to undermine the development of a "broadband nation." At the present time, there is only very limited demand — primarily in the form of early adopters and telecommuters — for sub-T-1 "high speed" Internet access, and virtually no demand at all for greater than T-1 data rates. What is currently referred to as "broadband" — "high-speed Internet access" — has itself been available as a mass-market product for only about five years, and while the ILECs allege that deployment (by unregulated cable companies and other carriers as well as regulated LECs) has brought the availability of these services to virtually every household/customer across the country, only 5-10% of all US households now

13. As BellSouth itself notes in its Comments, "[i]f ILECs are forced to unbundle their investment in a nascent market to other carriers, they may simply choose not to invest," BellSouth Comments, at 17.

14. As will be discussed at length later in this declaration, supply elasticity is one of four market power tests advocated by the FCC when determining dominance in a given market.

buy this service.¹⁵ Absent the arrival of a “killer application” whose identification, let alone introduction, remains elusive, there is no present demand for “true” broadband services, and it is not likely that anyone – the Bells or otherwise – would commit consequential capital dollars to the deployment until actual demand emerges. Underscoring this critically important point, Verizon’s director of regulatory planning in Pennsylvania and Delaware, Debra Berry, in defending her company’s scaled-back broadband deployment efforts,¹⁶ was recently quoted as stating that “...it became obvious that giving customers 45 megabits per second would not be feasible and might even be a waste of bandwidth, or transmission capacity, since few users of the Internet can fully exploit 45-megabit speed.”¹⁷

15. DirecTV Comments, at 15, citing “Broadband Success Requires More than Regulatory Clearance, Says Research, CLEC News, February 21, 2002, available at <http://www.isp-planet.com/cplanet/news/02feb2002/18broadband.html> (accessed April 16, 2002); Verizon Comments, Exhibit A, “Broadband Fact Report,” March 1, 2002 (“*Verizon Broadband Fact Report*”), at 19, citing TeleChoice and Morgan Stanley reports.

16. In its 2000 Biennial Update, Bell Atlantic sought to change its bandwidth commitment as required in its Chapter 30 Network Modernization Plan from 45 Mbps service to 1.5Mbps service. In a March 28, 2002 Pennsylvania Public Utility Commission public meeting, the Commission accepted Commissioner Terrance Fitzpatrick’s motion to reject Bell Atlantic’s 2000 Biennial Update, and require the Company “to submit within 45 days a revised plan to comply with its legal obligation to provide broadband capability of at least 45 Mbps upstream and downstream.” See Verizon Pennsylvania, Inc. Chapter 30 Network Modernization Plan – 2000 Biennial Update, PA PUC Docket No. P-00930714, Public Meeting March 28, 2002, MAR-2002-FUS-0429*, Motion of Commissioner Terrance J. Fitzpatrick, March 28, 2002, at 6-7.

17. Parker, Akweli; “A PUC member challenges Verizon’s fast-Internet rollout,” *The Philadelphia Inquirer*, March 29, 2002, available at <http://www.philly.com/mld/inquirer/2002/03/29/business/archive.html> (accessed April 4, 2002).

12. Commenting parties in this proceeding concur. As DirecTV notes, “while much of the public debate has focused on the percentage of Americans who still do not have access to broadband, an even greater percentage of Americans now have access but still do not subscribe. Recent studies show that many consumers are unwilling to pay more than \$25.00/month for high speed access and that this explains why less than 5% of U.S. households subscribe to it.”¹⁸ The Information Technology Association of America (ITAA) underscores this conundrum of supply and demand by observing that “in most locations, there is significantly more broadband supply than demand.”¹⁹ If such a limited market exists and there is no guarantee that DSL roll-out will attract sufficient numbers of new customers to recover the sunk costs, then the aggressive deployment strategies that are being advocated by some ILEC commenting parties should be seriously reconsidered.

II. SBC’s Crandall and Sidak have concocted overbroad definitions of the relevant product market and relevant geographic market, and on that basis “conclude” that ILECs do not possess market power in broadband services.

13. The declaration submitted by Crandall and Sidak in support of SBC’s *Petition* purports to “determine whether it would serve the public interest for the FCC to declare SBC’s affiliates

18. DirecTV Comments, at 15, citing “Broadband Success Requires More than Regulatory Clearance, Says Research, CLEC News, February 21, 2002, available at <http://www.isp-planet.com/cplanet/news/02feb2002/18broadband.html> (accessed April 16, 2002).

19. ITAA Comments, at 24.

... non-dominant in their provision of high-speed packet switched or ‘advanced’ service.”²⁰ Crandall and Sidak initially support the separation of broadband services into two segments, “mass market” and “large business.”²¹ Then, in keeping with what Crandall and Sidak describe as the FCC’s approach when assessing AT&T’s non-dominant status in the provision of domestic interexchange interstate services,²² Crandall and Sidak contend that all mass-market “high-speed” Internet services, including DSL, cable modem, direct broadcast satellite (DBS) and fixed wireless service, are in the same product market²³ because, they argue, (1) the services are “substantially similar,” (2) consumers view these services as substitutes; (3) the providers of these services view themselves as competitors; and (4) prices for broadband service offerings are similar.²⁴ Significantly, Crandall and Sidak concurrently omit dial-up 56 kbps Internet access from their “relevant product market,” notwithstanding the fact that it too shares these same four attributes.

14. Crandall/Sidak argue that the FCC’s methodology as it was applied in granting AT&T’s petition for non-dominant status in the interLATA services market²⁵ should be applied with

20. *Id.*, at para. 15.

21. *Id.*, at para. 30.

22. *Id.*, at para. 26.

23. *Id.*, at paras. 33-34. *See also* SBC Petition, at 20.

24. *Id.*, at paras. 35-39.

25. Crandall and Sidak allege that “[a]s with a long-distance voice call, customers do not view broadband connections originating in different locations to be close substitutes for each other.”

respect to broadband services, and purport to utilize their interpretation of that methodology in defining the relevant geographic market for mass-market broadband services. Crandall/Sidak define the “relevant product market” with respect to broadband as consisting of “all possible routes that allow for a connection from one particular location to another location.”²⁶ Crandall and Sidak contend that, similar to the FCC’s conclusion with respect to long distance voice service, “there is no credible evidence that there is any particular “point-to-point” market or group of “point-to-point” markets in which SBC could exercise market power in the provision of DSL services.”²⁷ From that reasoning, Crandall/Sidak conclude that the relevant geographic market for mass-market broadband services in the SBC region consists of SBC’s entire 13-state service territory.²⁸

15. Following establishment of what they consider to be the relevant product and geographic markets, Crandall/Sidak then proceed to “apply” the “FCC’s rules” used in identifying whether ILECs (SBC in particular) are “dominant” in the provision of broadband

Id., at para. 42, citing In the Matter of Regulatory Treatment of LEC Provision of Interexchange Services Originating in the LEC’s Local Exchange Area and Policy and Rules Concerning the Interstate, Interexchange Marketplace, CC Docket No. 96-149, *Second Report and Order*; In the Matter of Policy and Rules Concerning the Interstate, Interexchange Marketplace, CC Docket 96-61, *Third Report and Order*, 12 FCC Rcd 15756, 15792-93 (1997) (“*BOC Classification Order*”).

26. Crandall/Sidak Declaration, at para. 42.

27. *Id.*, at para. 43.

28. *Id.*, at paras. 42-43.

services.²⁹ The FCC defines a dominant carrier to be one that has market power, and a non-dominant carrier as one not found to be dominant.³⁰ Crandall and Sidak cite the four standards previously utilized by the FCC in assessing the presence of market power in earlier non-dominance proceedings with respect to interLATA services, then advance the notion that the same standards and analyses are applicable for demonstrating ILEC non-dominance in mass-market broadband services. Those four factors are: (1) market share and changes therein; (2) demand elasticity; (3) supply elasticity; and (4) disparity in size, resources and costs between service providers.³¹ Crandall/Sidak assert that ILECs satisfy each and all of the FCC's tests, and so cannot possibly be considered "dominant" in the provision of broadband services.

Specifically, they contend that:

- (1) ILECs do not possess dominant market share because (a) cable modem service providers have a near-ubiquitous network and hold substantial market share in the broadband service market; (b) DSL service itself only represents 30% of the market for

29. Interestingly, SBC did not agree with the FCC that relying on the product and geographic market definitions outlined in the *1992 Merger Guidelines* was appropriate in the context of "determining whether or how to regulate a market or to establish a rationale for disparate regulation of market participants." *BOC Classification Order*, 12 FCC Rcd 15770-15771, ¶ 20, citing SBC April 19, 1996 Comments at 3-4.

30. 47 C.F.R. §§ 61.3(o), 61.3(u).

31. *Motion of AT&T Corp. to be Reclassified as a Non-Dominant Carrier*, Order, 11 FCC Rcd. 3271, 3293, ¶38 (1995) ("AT&T Reclassification Order").

broadband services; and (c) there exists a variety of alternative, substitutable broadband service offerings from other entities.³²

(2) DSL and cable modem service are each price-elastic *where both are available*, based upon the results of their “study” of the own price elasticity of demand for DSL and cable modem service.³³

(3) The market for broadband services is supply elastic, because cable networks can fully absorb the entirety of an ILEC’s DSL customer base.³⁴

(4) Cable modem providers are large-scale entities and possess adequate resources as to be comparable to the incumbent LECs.³⁵

16. Finally, Crandall and Sidak conclude that ILECs are unable to leverage market power from telephone exchange or exchange access into the mass-market broadband services market because they have not yet been able to capture significant market share. Crandall/Sidak claim that an ILEC cannot acquire market power because it is unable to (1) set prices at predatory

32. Crandall/Sidak Declaration, at paras. 44-48; 54-57.

33. *Id.*, at paras. 62-71.

34. *Id.*, at paras. 72-76.

35. *Id.*, at paras. 77-83.

levels; (2) cross-subsidize from basic local exchange services; and (3) discriminate against unaffiliated carriers. In consideration of all of these issues, Crandall/Sidak contend that DSL service is simply a player in the competitive broadband market, and does not require regulation. They conclude that “SBC lacks market power in the mass-market broadband services market and is therefore non-dominant.”³⁶

17. Crandall/Sidak’s expansive definitions for the relevant product and geographic markets for mass-market broadband services is inappropriate and results in misleading conclusions regarding the true market power held by incumbent local exchange carriers in broadband services. As the following sections of this declaration will demonstrate, Crandall and Sidak have improperly applied historic FCC market definitions to the broadband services market, resulting in their erroneous conclusion that ILECs do not possess market power and are non-dominant in the provisioning of mass-market broadband services. When the relevant markets are appropriately defined (as I describe below), application of the FCC’s tests for market power clearly demonstrate that ILECs do possess substantial market power and require continued regulation as dominant carriers.

36. *Id.*, at para. 128.

III. The appropriate definitions of the relevant product and geographic markets for mass-market broadband services are much narrower in scope than Crandall and Sidak would have the Commission believe.

18. In principle, it is certainly reasonable to look to previous FCC rulings relating to market dominance as a basis for considering the appropriate regulatory status for ILEC-provided broadband services. However, the application of earlier FCC determinations is appropriate if and only if the *facts* pertaining to the services at issue in prior determinations — interLATA toll services — are comparable to those pertaining to the services at issue here — ILEC broadband and DSL services. As it turns out, these services could not be more different from interLATA toll in virtually every material respect.

19. InterLATA switched services are furnished using networks of *common* switching and transmission facilities *none of which are dedicated to specific individual customers*. Indeed, with respect to interLATA services, the *dedicated* elements of the service — the individual subscriber access line — was separated out and removed from AT&T's network in the 1984 break-up of the former Bell System. In stark contrast, ILEC broadband services are themselves *access services* that require resources dedicated to individual subscribers. In the case of interLATA long distance service, all that a competing interexchange carrier needed to do to serve *an entire LATA* was to establish a *single point of presence* in that LATA, from which the carrier could obtain connectivity to *every ILEC customer access line*. Once on the IXC network, any call could be connected to any IXC point of presence in any LATA, from where it could be connected *by the ILEC* to any of the ILEC's subscribers. The FCC was clearly correct in its

finding that the interstate long distance market could be treated as a single national market absent credible evidence indicating there to be a lack of competition in a particular point-to-point market.³⁷

20. ILEC broadband access services are nothing other than point-to-point connections, providing connectivity between individual customer premises and the Internet or other geographically dispersed network. But it is those *access connections* that are at issue here, *not the Internet*. Unless a competing facilities-based provider has deployed network assets serving specific customer locations, the ILEC will maintain its monopoly with respect to that customer. To paraphrase a former Speaker of the House of Representatives, “all broadband access is local.” While the FCC’s market power test provides a valid basis for evaluating the need for deregulation of ILEC broadband services, it must be applied with the *correct* market definitions. And when the correct definitions are applied, it becomes clear that ILECs have been and continue to be dominant in the broadband services markets in which they participate.

21. The FCC first articulated its market power criteria (with respect to business services) in 1991 in the *AT&T Streamlining Order*.³⁸ It was at this time that the FCC established the four primary factors to determine market power: (1) market share and changes therein; (2) price elasticity of demand; (3) supply elasticity; and (4) disparity in size/resources/costs of competing

37. *BOC Classification Order*, 12 FCC Rcd 15756, 15793-15794 ¶¶ 65-66.

38. In the Matter of Competition in the Interstate Interexchange Marketplace, Report and Order, CC Docket No. 90-132, 6 FCC Rcd. 5880 (1991)(“*AT&T Streamlining Order*”).

firms in the market. The same analytical framework was applied by the FCC in 1995 in the *AT&T Reclassification Order*,³⁹ at which time AT&T was found to be non-dominant in the interLATA service market. It was in this proceeding that the FCC first identified the relevant product and geographic markets for assessing AT&T's market power. Importantly, the FCC concluded at that time that all interstate, domestic interexchange services were to be considered to be in the same product market, and that the relevant geographic market was the nation as a whole.⁴⁰ Based upon these definitions, the FCC concluded that AT&T did not have market power in the interLATA long distance market.⁴¹

22. In the 1997 *BOC Classification Order*, the FCC revised its approach to defining relevant product and geographic markets,⁴² adopting the Department of Justice *1992 Horizontal Merger Guidelines*⁴³ framework in lieu of the criteria that had been adopted in the Commission's

39. *AT&T Reclassification Order*, 11 FCC Rcd. 3271, 3285, ¶20.

40. *AT&T Reclassification Order* 11 FCC Rcd. 3271, 3287, ¶23.

41. *AT&T Reclassification Order* 11 FCC Rcd. 3271, 3288, ¶26. The same process was also applied in both the *AT&T International Non-Dominance Order* and *COMSAT Non-Dominance Order*. In the Matter of Motion of AT&T Corp. to be Declared Non-Dominant for International Services, 11 FCC Rcd 17963, 17977 ¶ 36 (1996); In the Matter of COMSAT Corp., Petition Pursuant to Section 10(c) of the Communications Act of 1934, as amended, for Forbearance from Dominant Carrier Regulation and for Reclassification as a Non-Dominant Carrier, 13 FCC Rcd 14083, 14118-14119 ¶ 67 (1998).

42. *BOC Classification Order*, 12 FCC Rcd 15756, 15774 ¶ 26.

43. 1992 Department of Justice/Federal Trade Commission Horizontal Merger Guidelines, 4 Trade Reg. Rep. (CCH) ¶ 13, 104, at 20569 ("*1992 Horizontal Merger Guidelines*"), available at http://www.usdoj.gov/aatr/public/guidelines/horiz_book/hmg1.html.

Competitive Carrier proceeding.⁴⁴ The FCC was also very clear that the NPRM that had led to the *BOC Classification Order* specifically sought to “revise the relevant product and geographic market definitions for purposes of determining whether a carrier should be regulated as dominant or nondominant *in the provision of interstate, domestic, interexchange services*.”⁴⁵ Within that context, the relevant product market was defined as “any ... service for which there are not close demand substitutes, or a group of services that are close substitutes for each other, but for which there are not other close demand substitutes.”⁴⁶ The FCC noted that “we need not delineate the boundaries of specific product markets, except where there is credible evidence suggesting that there is or could be a lack of competitive performance with respect to a particular service or group of services.”⁴⁷ Since no boundaries were delineated, it would appear that no such “credible evidence” on a lack of competitive performance was presented with respect to long distance services.

23. In that same proceeding, the relevant geographic market was defined as “a point-to-point market, rather than as a single national market.”⁴⁸ However, in recognition of the

44. *In the Matter of Policy and Rules Concerning Rates for Competitive Common Carrier Services and Facilities Authorizations Therefor*, CC Docket No. 79-252, *Fourth Report and Order*, 95 FCC 2d 554, 562 ¶ 13 (1983).

45. *BOC Classification Order*, 12 FCC Rcd 15759, ¶ 2, emphasis supplied.

46. *Id.*, 12 FCC Rcd 15782, ¶ 40.

47. *Id.*

48. *Id.*, 12 FCC Rcd 15793, ¶ 65.

impracticality of assessing market power in every point-to-point market, the FCC determined that such an undertaking would not be necessary “[u]nless there is credible evidence suggesting that there is or could be a lack of competition in a particular point-to-point market or group of point-to-point markets...”⁴⁹ Apparently concluding that no such credible evidence had been presented relative to *long distance* service, the FCC determined that long distance calling could and would be treated as a single national market.⁵⁰

The FCC promotes the use of finely-tuned market definitions in order to accurately assess market power.

24. By adopting definitions from the *1992 Horizontal Merger Guidelines* that were interpreted and applied to long distance services, the FCC recognized the “inherent flexibilities” attendant to these new definitions that would permit an assessment of market power based upon a particular carrier’s (or group of carriers’) unique market situation.⁵¹ Indeed, the FCC supported its adoption of these definitions by stating that “...in recognition that certain carriers may control discrete facilities in specific geographic areas, target particular types of customers, or provide specialized services, our new market definitions allow us to examine the relevant product and geographic markets at the level of detail necessary to make a more accurate assessment of

49. *Id.*, 12 FCC Rcd 15794, ¶¶ 66-67.

50. *Id.*, 12 FCC Rcd 15794, ¶ 66.

51. *Id.*, 12 FCC Rcd 15776, ¶ 30.

market power than under the *Competitive Carrier* definitions.”⁵² The FCC concluded that “more detailed market definitions are needed to assess market power more accurately and to pinpoint the particular markets where that power is or could be exercised.”⁵³ Ignoring entirely these clear FCC determinations, in advancing their “non-dominance” theory with respect to ILEC broadband services, Crandall and Sidak revert back to earlier broad-based definitions of relevant product and geographic markets that had been applied by the FCC with respect to long distance; in doing so, they sidestep the obvious and important distinctions between “long distance” and “broadband” as well as the entirely “credible evidence” that a severe lack of competition for ILEC DSL and other Internet access services prevails in many geographic markets.

The relevant product market

25. Crandall and Sidak look broadly at the self-described “mass-market” and claim that the relevant product market for broadband services encompasses all mass-market broadband services (including cable modem, satellite, fixed wireless and DSL) “which are used almost exclusively to access Internet service providers and the Internet.”⁵⁴ The validity of this expansive definition,

52. *Id.*

53. *Id.*

54. Crandall/Sidak Declaration, at para. 33. Interestingly, the discussion and rationale on the relevant product market set forth by Crandall and Sidak repeatedly reference “residential” consumers and services, yet the mass-market has been so broadly defined as to include small business and small or home office locations as well. Numerous commenting parties have objected to the lack of differentiation as between the residential and small business location

which conveniently omits 56kbps dial-up Internet access, rests critically upon the actual substitutability of these services for one another. While that substitutability is being *asserted* by Crandall/Sidak, only limited — and highly questionable — “evidence” as to such substitutability is actually provided.

26. Cable modem, satellite, fixed wireless and DSL will qualify as “substitutes” for one another where (a) they provide comparable functionality from the customer’s perspective, and (b) are actually available for purchase by the customer. Unless both of these conditions are present with respect to services other than DSL throughout the entire geography being served by a given ILEC, the market power of the ILEC with respect to DSL will go unchallenged. The FCC has stated that defining particular services as separate product markets “should only be made in the context of assessing the market power of a particular carrier or group of carriers.”⁵⁵ The FCC has concluded that it must rely “solely on demand substitutability considerations” in defining the correct relevant product market.⁵⁶ When the FCC adopted definitions for the relevant product and geographic markets for interLATA services, it was clear that the interLATA market was (1) national in scope, and (2) open to a wide range of service providers. InterLATA equal access made all potential customers addressable by all IXCs; all an IXC needed was a single point of presence (POP) in a LATA to gain access to all ILEC customers in

markets for broadband services. *See, e.g.*, Ad Hoc Comments at 7-8; Covad Comments, at 14-15.

55. *BOC Classification Order*, 12 FCC Rcd 15783, ¶ 43, footnotes omitted.

56. I.e., without specific regard for supply substitutability. *Id.*, 12 FCC Rcd 15775, ¶ 27.

that LATA both for call origination and call termination purposes. Even where a start-up IXC's own network was not built out in all LATAs, FCC requirements that AT&T resell interLATA services to the new IXCs enabled them to rapidly extend their service nationwide. From the consumer's perspective, competing carriers provided not just *close substitutes* for the AT&T services (that being end-to-end connection of long distance telephone calls), but *near-perfect* substitutes. Competitive alternatives to AT&T were abundant: When AT&T was found to qualify for non-dominant status, it not only confronted extensive facilities-based competition from Sprint, MCI, and other carriers, but also was required to and did offer its facilities-based services for resale to any carrier. Thus, choosing between interLATA service providers was a simple and relatively inexpensive process, and once the dialing disparities were eliminated with implementation of equal access in the late 1980s, there was no longer any discernable difference to the customer as between AT&T and competing long distance services.

27. Contrast this with the current market for DSL, where the relevant market is local in scope with respect to both retail (end user) and wholesale (UNE) services. CLECs are able to offer DSL using ILEC facilities only if (a) there is no fiber segment in the subscriber line; (b) the length of the copper segment is no longer than 18,000 feet; (c) the CLEC has collocation space in the ILEC central office; and (d) the subscriber outside plant is or can be "qualified", i.e., made suitable to carry a DSL channel. ILECs therefore have substantial control over the supply of DSL services, and are able to deploy or not deploy DSL services as their strategic business interests and priorities dictate.

28. At the time that AT&T was found to qualify for non-dominant status for interLATA service, its entire nationwide footprint was addressable by competing IXCs. That is distinctly not the case with respect to DSL. To apply the same standards for nondominance to ILECs with respect to DSL service as were applied to AT&T for long distance, as Crandall/Sidak would have the Commission do, would be to ignore the critical differences in the nature of these services.

29. Moreover, the various services that are proffered as “intermodal” competition for DSL — cable modem services, satellite, and fixed wireless — are certainly not perfect substitutes, and in fact are not even close substitutes. As Crandall and Sidak admit, satellite-based services require the use of a conventional landline telephone connection for the uplink, limiting upstream data rates to 56 kbps or lower modem speeds.⁵⁷ Fixed wireless services are not even available except on highly limited service trials, and are likely limited to areas where the technology’s engineering limitations are not problematic.⁵⁸ The very limited penetration rates for satellite and fixed wireless broadband services only underscore their lack of standing as true substitutes for DSL service.⁵⁹ Customers do not perceive satellite and fixed wireless “broadband” services to

57. Crandall/Sidak Declaration, at para. 46.

58. Problems experienced by other purveyors of fixed wireless telecommunications services have included obtaining rights-of-way to building rooftops and addressing line-of-sight restrictions.

59. According to the FCC’s Third Broadband Report, as of June 30, 2001, fewer than 200,000 high-speed lines are served nationwide via satellite, and only 194,707 were served by fixed wireless service. *In the Matter of Inquiry Concerning the Deployment of Advanced*

be close substitutes for DSL, placing them squarely *outside* of the “relevant product market.” In fact, 56kbps dial-up Internet access is the most important “substitute” for DSL, yet this ILEC-dominated service was omitted entirely from the Crandall/Sidak “product market.”

30. For some users, cable modem service appears to provide a functional alternative to DSL. However, as the Ad Hoc Committee has observed, cable modem services lack the security and reliability necessary for most *business* uses, and may not even be available in business locations.⁶⁰ Cable-based service is, in any event, only a “substitute” for DSL to the extent that a cable-based service is physically available at the same customer location. In practice, the concurrent availability of both DSL and cable modem services at the same customer location has been so limited up to this point that no valid judgment can be made as to their actual substitutability; Crandall and Sidak have of course attempted to do this through a purported price elasticity “study,” but as I demonstrate below, their methodology is so flawed and the data upon which it relies is so limited as to afford no credibility to their “results.”

31. In defining product markets, the FCC sought to maintain the flexibility “to recognize separate product markets only when there is credible evidence indicating that there is or could be

Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, CC Docket No. 98-146, Third Report, rel. February 6, 2002 (“*Third Broadband Report*”), at Table 1.

60. Ad Hoc Comments, at 16-19.

a lack of competitive performance with respect to a particular service or group of services.”⁶¹ It is well recognized that no single broadband service is ubiquitously available, let alone is there service redundancy (i.e., “overlap” of broadband service coverage areas) on a large-scale basis. In fact, Verizon claims that only one-third of all US households have both DSL and cable modem service,⁶² and in fact, that assessment may itself be significantly overstated.⁶³ Moreover, even if cable modem service *were* considered to be a perfect substitute for DSL, one-quarter of the 45% of US households to which DSL service is now available⁶⁴ would still lack access to a truly substitutable broadband service option.⁶⁵ Credible evidence clearly exists to demonstrate that there is or could be a lack of competitive performance with respect to DSL service,⁶⁶ thus supporting the notion of segregating DSL service into its own product market when testing ILEC market power.

61. *BOC Classification Order*, 12 FCC Rcd 15783, ¶ 42.

62. *Verizon Broadband Fact Report*, at 1.

63. As I will discuss later, the data relied upon by Crandall and Sidak to demonstrate price elasticity of demand for DSL and cable modem service indicates that the overlap for these two services is only 12%.

64. *Third Broadband Report*, at para. 51, citing a Yankee Group study.

65. *Verizon Broadband Fact Report*, at 1.

66. The approach adopted by the FCC was not designed to, “impose an undue burden on parties seeking to have the Commission define narrower relevant product market markets in order to assess market power of a particular carrier or group of carriers.” Indeed, the FCC noted that, “[s]uch parties will not have to prove that there is an actual lack of competitive performance with respect to a particular service or group of services. Rather, they must only present credible evidence that there is or could be a lack of competitive performance.” *BOC Classification Order*, 12 FCC Rcd 15784, ¶ 44, footnotes omitted.

32. Crandall/Sidak conveniently confined their product market definition and alleged price elasticity analysis (discussed later in detail) to DSL and cable modem service. However, according to the most recent *FCC Broadband Report*, fully 80% of the mass-market continues to access the Internet on a dial-up basis using 56 kbps modems,⁶⁷ and that number may be as high as 88%.⁶⁸ Statistics support the conclusion that many of these consumers have obtained second telephone lines primarily or even exclusively for the purpose of accessing the Internet. Approximately 28% of all US households currently have two or more phone lines.⁶⁹ Ten years ago, i.e., before the advent of the Internet as a mass-market service, the nationwide average penetration rate for second residential access lines was only 3%.⁷⁰ Hence, roughly 25% of all US households access the Internet via second phone lines. It is estimated that roughly half of all US households use the Internet on a regular basis.⁷¹ Thus, the “second line” “narrowband” access segment represents about half of all Internet users. Based upon their decision to purchase a “second line,” it is reasonable to conclude that, of all dial-up customers, this group in particular likely makes the heaviest use of the Internet and are thus the most likely candidates to migrate to

67. *Third Broadband Report*, at para. 63.

68. *Verizon Broadband Fact Report*, at 21.

69. As year-end 1999, 28.9% percent of households with telephone service subscribed to additional residential lines. FCC, Industry Analysis Division, *Trends in Telephone Service*, August 2001, at Table 8.4: Additional Residential Lines for Households with Telephone Service.

70. As of year-end 1989, 3% of households with telephone service subscribed to additional residential lines. *Id.*

71. *Verizon Broadband Fact Report*, at 19.

“broadband” access. These consumers are currently paying for a second access line (typically around \$15 to \$18 including the SLC) and are also paying separately for dial-up ISP service (which costs roughly \$20 to \$22 per month for unlimited use). Thus, the total price of “narrowband” Internet access for the heaviest residential users is around \$40 a month, while the price for DSL or cable modem service, *which includes the ISP service*, is typically \$45 to \$50 a month — i.e., not very different, particularly when you consider how much that extra \$5-\$10 buys you in transmission speed.⁷² Under these circumstances, it is clear that narrowband access is a substitute for “broadband” Internet access.

33. Significantly, these second residential access lines are provided primarily by ILECs. The combination of a second residential line together with a subscription to an ISP is obviously highly cross-elastic with DSL and cable modem service. The ILECs are thus in the position of managing – through pricing and availability – the migration of their second access line customers from that service to DSL. It would be in the ILECs’ best interest to preserve second line revenues by slow-rolling the deployment of DSL, particularly where the competing cable modem service is not itself being offered. A 2000 study conducted by Economics and Technology, Inc. of cable modem and DSL deployment in Massachusetts confirmed that the cable service typically became available first, followed sometime later by the (then) Bell Atlantic DSL offering.⁷³ Obviously, if all that ILECs accomplish with their DSL deployment is to

72. See also AT&T Comments, at 39-40.

73. ETI Study, “Bringing Local Telephone Competition to Massachusetts,” Lee L. Selwyn and Helen E. Golding, January, 2000, at 16-24.

migrate their own second line customers to DSL, they would have spent a lot of money on deployment while not realizing much in the way of a net revenue gain, because customers would presumably discontinue their second lines once they subscribed to DSL.⁷⁴ This could well explain why ILECs control only 30% of the combined DSL/cable modem market: Not, as Crandall/Sidak incorrectly conclude, because customers have a preference for the cable-based service, but rather because the ILEC DSL service was *withheld* for as long as possible by the ILECs so as to protect their second line market. And if that second line penetration is added to the DSL penetration, the ILEC share of “mass-market Internet Access” services rises to 90%,⁷⁵ certainly not the 30% being claimed by SBC and its consultants. It is in any event incorrect, as Crandall/Sidak have done, to simply exclude these “narrowband” customers from the broad market definition as they propose.

74. There is some evidence that this is in fact taking place. In the past three years, the number of residential access lines has dropped from 115,330,350 (1999) to 114,635,263 (2000) and again to 111,761,660 (2001). Federal Communications Commission, ARMIS Report 43-08 (Table III. Access Lines in Service by Customer), for years 1999, 2000, 2001, accessed 04/19/02.

75. The 90% share was calculated by adding switched access lines and high-speed lines (including fixed wireless, satellite, fiber). FCC, Industry Analysis Division, *High-Speed Services for Internet Access: Subscribership as of June 30, 2001*, February 2002, Table 1: High-Speed Lines; FCC, Industry Analysis Division, *Local Telephone Competition: Status as of June 30, 2001*, February 2002, Table 1: End-user Switched Access Lines Reported.

The relevant geographic market

34. Crandall and Sidak conclude that when assessing ILEC market power for broadband services, the same definition that the FCC had applied for interLATA switched services should be applied, *viz.*, the “relevant geographic market” consists of point-to-point markets that are not sufficiently distinct from one another as to warrant an assessment of market power in each individual market, thus allowing them to be defined as a single geographic market.⁷⁶

Crandall/Sidak hold that “the relevant geographic market for mass-market broadband services is all possible routes that allow for a connection from one particular location to another location (that is, a point-to-point market).”⁷⁷ Invoking the FCC’s “impracticality clause,” Crandall and Sidak then assert that no credible evidence exists to demonstrate that SBC could exercise market power in any given point-to-point market or group of point-to-point markets in the provision of DSL service.⁷⁸ In support of this position, Crandall and Sidak cite to (1) the large quantity of cable modem service providers; (2) analyst reports on the alleged ubiquity of cable modem

76. Crandall/Sidak Declaration, at paras. 42-43. In support of their position, Crandall/Sidak also refer to other FCC proceedings wherein the same conclusion regarding groups of similarly-situated point-to-point markets is made. *Id.*, at para. 27, citing Application of Ameritech Corp., Transferor, and SBC Communications, Inc., Transferee, for Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Section 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95 and 101 of the Commission’s Rules, CC Docket No. 98-141, Memorandum Opinion and Order, 14 FCC Rcd 14712, 14747 (1999)(“*SBC/Ameritech Merger Order*”); *COMSAT Non-Dominance Order*, 13 FCC Rcd 14083, 14107.

77. Crandall/Sidak Declaration, at para. 42.

78. *Id.*, at para. 43.

networks; (3) the fact that DSL availability only approaches 50% of all US households; (4) the existence of CLECs providing alternatives to ILEC DSL service; and (5) the presence of satellite and fixed wireless service providers capable of filling any niche markets that may exist.⁷⁹

35. The FCC's application of a geographically expansive (i.e., nationwide) market definition in assessing market power with respect to long distance carriers was appropriate in that case precisely because IXCs were afforded access to *all individual subscriber lines provided by ILECs*. Competitive alternatives to AT&T long distance service were not confined to geographic footprints precisely because *any* IXC was able to originate or deliver *any* call from or to *any* ILEC customer. However, a far more narrow geographic scope is required with respect to services that involve a physical connection to a customer's home or business premises. In the case of mass-market broadband services, the "service" at issue is the physical facility connecting the subscriber premises to the Internet, *not the Internet itself*.⁸⁰ Thus, Crandall and Sidak's strawman reference to FCC rulings with respect to "point-to-point" markets is inapposite here, because we are dealing with the "last mile" access link between the end user and the Internet, distinctly *not* a "point-to-point" connection between two locations both of which are *connected* to the network. DSL offers a means of accessing the Internet; thus, the correct analogy here is the local subscriber line as a means of accessing interLATA long distance service. *The FCC has*

79. *Id.*, at paras. 43-48.

80. Indeed, Crandall and Sidak agree, as they state that "all mass-market broadband services ... are used almost exclusively to *access Internet service providers and the Internet...*" *Id.*, at para. 33.

never considered the subscriber line and long distance service as existing within the same market, and the same applies with respect to DSL/cable modem (analogous to subscriber line) and the Internet (analogous to long distance network).

36. Furthermore, unlike interexchange long distance service, competition for DSL can only exist either (a) where a CLEC/DLEC obtains the DSL channel as a UNE from the ILEC and provides it at retail to the end user, or (b) where a non-DSL alternative (e.g., cable modem) is available *at the same customer location*. Where an ILEC does not offer DSL (be it a whole town or central office serving area or even an individual street), the ILEC is *not* in the broadband market *at that location*. As the Department of Justice's 1992 *Horizontal Merger Guidelines* specify, the relevant geographic market is defined by inquiring as to whether the customer can move his/her purchase to another area to avoid a price increase: if so, then the market includes that area, too.⁸¹ As noted by Covad, if DSL is not available in Rochester, the fact that it may be available in New York City does not constitute a substitute.⁸² Even more narrowly, if DSL is not available on Elm Street, the fact that it may be available on Maple Street does not constitute a substitute for the Elm Street customer. By including non-DSL areas in their market definition, Crandall and Sidak understate actual ILEC share *in the geographic market in which ILECs actually provide service*.

81. 1992 *Horizontal Merger Guidelines*, Section 1.12, available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/12.html.

82. Covad Comments, at 18.

37. As previously noted, the relevant product market when assessing ILEC market power is DSL service itself, without regard for other alleged substitute services. Even assuming sufficiently close functional substitutability, cable modem and DSL services can be defined as comprising the same market *only in those locations where both services are being offered*. Thus, whereas Crandall/Sidak propose a geographic market definition that would embrace the entire ILEC service territory, a more appropriate market definition *for the specific purpose of assessing ILEC market power* would be “those areas within the ILEC’s service territory in which DSL service is *available*.” As noted earlier, the actual overlap of these two service networks is subject to debate. Regardless of which set of data points is used, there can be no argument but that a substantial quantity of all US households fall decidedly *outside* the correct DSL geographic market definition.

38. Correctly narrowing the relevant geographic market provides substantial “credible evidence” that “there is or could be a lack of competition in a particular [] market,”⁸³ for it is at the localized level that broadband services are purchased, where carriers confront (or fail to confront) competition, and thus where market power exists and is abused.

83. *BOC Classification Order*, 12 FCC Rcd 15794, ¶ 66.

IV. Application of the FCC's four-pronged test of market power to the ILEC local DSL market.

ILECs dominate both the retail and wholesale markets for DSL service, and have increased market share even in the face of price increases for DSL.

39. Any market share analysis used to assess ILEC market power in the broadband services market must focus upon the DSL market at the local level and closely examine the wholesale market share held by ILECs as well. As ITAA asserts in their comments, “[t]here is no doubt that, at the present time, far more residential customers obtain broadband Internet access service from cable-based ISPs than from wireline-based ISPs. The relevant question, however, is whether the existence of *retail* cable-based Internet access services constrains the ability of the ILECs to act anti-competitively in the *wholesale* broadband telecommunications market. The answer, quite simply, is that it does not.”⁸⁴

40. DSL is an access service that is provisioned over subscriber access line facilities owned and controlled by the incumbent LECs. Because DSL is currently classified and regulated as a “dominant” LEC service, ILECs have been required to implement “line sharing” so that competitive DLECs can purchase the high-frequency portion of the loop on an unbundled (i.e., wholesale) basis and provide an alternative to the ILEC’s retail DSL service. But line sharing is only available on those subscriber lines that the ILEC “qualifies” as being DSL-capable. Without the availability of a DSL-qualified loop at the requested premises, competitors relying

84. ITAA Comments, at 13.

on ILEC infrastructure to provide DSL services cannot enter that particular geographic market. This situation places the incumbent LEC in substantial control over the general deployment of DSL services to all end users, regardless of whether those end users take the DSL service directly from the ILEC (at retail) or from a “line sharing” UNE provider.

41. Significantly, the mere fact that an ILEC may be nominally *required* to provide line sharing does not mean that the manner by which this is accomplished is sufficient to make it feasible or economically viable for a CLEC to provide a similar service. Indeed, the demise of CLECs and DLECs whose business plans were predicated upon their use of the DSL channel UNE underscores the very impressive market power the ILEC possesses in its position of “gatekeeper” to the deployment of DSL technologies.⁸⁵

42. Available market share data indicates that incumbent LECs hold a considerable competitive advantage by maintaining control over the roll-out of DSL services, a point that is acknowledged by Crandall and Sidak. Relying upon December, 2000 data from a survey conducted by TeleChoice, Crandall and Sidak state that CLECs accounted for just 16% of the

85. “Blaming Verizon For Bankruptcy, NorthPoint Plans Asset Auction,” *TR Daily*, January 22, 2001; “Rhythms NetConnections Files Bankruptcy, Seeks ‘Going-Concern’ Bids”, *TR Daily*, August 2, 2001; “Rhythms Doesn’t Find Financial Rescuer, Sends Out Service-Termination Notices”, *TR Daily*, August 10, 2001; “Covad Plans Restructuring As Rhythms Goes Bankrupt”, *TR’s Last-Mile Telecom Report*, August 13, 2001; “Covad Files for Bankruptcy in Accordance with Refinancing Plan,” *TR Daily*, August 15, 2001. “Winstar Blames Lucent For Bankruptcy, Says It Was ‘Seduced By Promises’”, *TR Daily*, April 18, 2001; “Struggling Teligent Files For Bankruptcy Protection”, *Telecommunications Reports Wireless*, May 24, 2001.

DSL (retail) market, leaving about 84% of the market served by incumbent LECs.⁸⁶ Since that time, numerous CLECs and DLECs have declared bankruptcy and left the market altogether. More current estimates of DSL market share supports the notion that ILECs have weathered this “competitive” storm well: According to Telechoice, as of December 2001, ILEC retail share of DSL lines grew to 88%,⁸⁷ and FCC data indicates that the ILEC share of the retail DSL market may be as high as 93%.⁸⁸ An even stronger indication of ILEC market power is the fact that while they were increasing their overall market share, ILECs completely dominated CLECs and IXC by succeeding in signing up 98% of the net DSL line additions for the calendar year 2001!⁸⁹

43. Finally, although making no particular distinction as between “residence” and “business” uses of DSL, neither Crandall/Sidak nor any ILEC commenting party has presented

86. Crandall/Sidak Declaration, at para. 46.

87. *North American DSL Market Reaches 5.5 Million, According to TeleChoice*, February 2, 2002, available at http://www.telechoice.com/newsdetail.asp?news_id=313 (accessed March 18, 2002).

88. *Third Broadband Report*, at Table 5 [(2,328,147 + 175,876)/2,693,834].

89. *North American DSL Market Reaches 5.5 Million, According to TeleChoice*, February 2, 2002, available at http://www.telechoice.com/newsdetail.asp?news_id=313 (accessed March 18, 2002); *North American DSL Market Reaches 3.5 Million in First Quarter*, May 14, 2001, available at http://www.telechoice.com/newsdetail.asp?news_id=98 (accessed March 18, 2002); *North American DSL Market Now at 4.1 Million*, August 10, 2001, available at http://www.telechoice.com/newdetail.asp?news_id=184 (accessed March 18, 2002); *DSL Lines in North America Total 4.75 Million in Q3, TeleChoice Says*, November 27, 2001, available at <http://www.broadbandinfo.com/index.asp?page=NewsJump.asp&ShowPreview=Y&top=Y&contentID=2147452778> (accessed March 18, 2002).

market share data for the small business customers encompassed within Crandall/Sidak's definition of the "mass market." The special needs of business users with respect to security, reliability and other service requirements eliminates cable modem services as functional substitute for DSL.⁹⁰ A number of commenting parties agree that the characteristics applicable to the small business or business location market do not equate to those for residential customers, and that cable modem service is widely considered to be inferior to DSL. Absent a showing to the contrary, it is reasonable to conclude that granting non-dominance to ILEC broadband services could have a serious anticompetitive effect upon small business users who face no substitutable service options.⁹¹

Crandall/Sidak's analysis of demand elasticity is so thoroughly flawed as to be useless in assessing price/demand relationships for broadband services.

44. Price elasticity of demand provides a quantitative basis for assessing the extent to which a particular product or service has close substitutes. A good or service will typically exhibit relatively price-elastic demand (i.e., own price elasticity > 1.0 ⁹²) where (a) the good or service has close substitutes (either because other products/services might satisfy the same or similar

90. Ad Hoc Comments, at 17-19; EarthLink Comments, at 17; Covad Comments, at 15; AT&T Comments, at 41.

91. As Ad Hoc noted, DSL may also serve the needs of large businesses in providing connectivity to small owned or affiliated retail locations. Ad Hoc Comments, at 17-19.

92. For a service to be considered "price elastic," a one-percent increase in price results in a greater than one-percent decrease in quantity demanded. *Microeconomics*, Robert S. Pindyck and Daniel L. Rubinfeld, Macmillan Publishing Company, 1989, at 264-265.

needs, or because the same product/service is available from competing suppliers), or (b) where the good or service is viewed by the consumer as “nonessential” or “discretionary.” Where demand is price-elastic, firms are generally constrained as to their ability to exercise market power.

45. Crandall/Sidak present a “study” purporting to demonstrate that both DSL and cable modem services are price elastic. Relying upon TNS Telecoms survey data and bill-harvesting sample, Crandall/Sidak claim to have analyzed consumer demand responses to different prices for DSL and cable modem service, and on that basis have concluded that the own-price elasticity for each is greater than 1.0, which implies that demand is relatively price-elastic. This seemingly quantitative finding is then advanced as “evidence” that ILECs do not possess market power with respect to DSL services. There are a number of serious flaws in the Crandall/Sidak price elasticity analysis that undermine the credibility of their conclusions.

46. The Crandall/Sidak study was limited to only those consumers who had access to *both* DSL and cable modem service at the time of the survey. Of the 62,846 survey respondents in the sample, only 7,561 observations, or 12%, had access to both DSL and cable and were thus included in their demand elasticity analysis.⁹³ Even if Crandall/Sidak’s conclusion (that the own-price elasticity for DSL is relatively elastic) were valid (and due to the numerous flaws in their study one cannot even reach that conclusion based upon their “evidence”), their study

93. Crandall/Sidak Declaration, at para. 130.

teaches *absolutely nothing* about the own-price elasticity for DSL for the 88% of consumers who were excluded from the analysis.⁹⁴ Unfortunately for Crandall/Sidak, this 12% “overlap” result does not square with their overall contention that “there are likely to be very few areas in which SBC offers DSL service but no cable provider offers cable modem service.”⁹⁵ In fact, referencing sources *other than the TNS data*, Crandall/Sidak cite a cable modem availability figure of approximately 70%-80%,⁹⁶ and put DSL availability at approximately 50% of the nation’s households.⁹⁷ Even under the most heroic of assumptions, the arithmetic here is not borne out by the TNS sample. So either the overall availability data proffered by Crandall/Sidak is grossly exaggerated, or the TNS dataset is grossly unrepresentative of actual market conditions, in which case the Crandall/Sidak demand elasticity study has been based upon a decidedly *unrepresentative* sample, and must be disregarded altogether.

47. Aside from these glaring data problems, the study methodology employed by Crandall/Sidak is also flawed. Crandall/Sidak’s description of their nested logit process is highly misleading, because it implies a study methodology in which consumers are asked to affirmatively *choose* among various alternatives in a multi-stage exercise. For example,

94. The fact that Crandall and Sidak have ignored the competitive effects of satellite and fixed wireless broadband service in their demand elasticity study underscores the limited impact these services have in assessing dominance in the broadband service market.

95. Crandall/Sidak Declaration, at para 45.

96. *Id.*

97. *Id.*

Crandall/Sidak state: “If the consumer chooses broadband access, the consumer then chooses in the second stage between DSL and cable modem.” In fact, no such succession of choices was offered to the survey participants by TNS; rather, the Crandall and Sidak study was conducted entirely after-the-fact based upon whatever purchase decisions (or non-decisions) the responding consumers had previously made. This is problematic for several reasons.

- First, although the respondents may have had access to both technologies *at the time of the survey*, there is no evidence that the same respondents had access to both technologies *at the time that they made their original purchase decision*. Crandall/Sidak *assume* that for the 12% of TNS households for which both DSL and cable modem service were available *at the time that the bill harvesting data was collected* (4th Quarter of 2000 and 1st Quarter of 2001), that those same consumers had the choice of DSL or cable *at the time that they originally ordered their DSL or cable modem service*. Not only is there no basis for accepting that assumption, *the assumption itself is almost certainly false*. Typically, one or the other of these services became available first, and consumers desiring broadband access — particularly “early adopters” — would not have had any choice as between the two services. These customers would not have been influenced at all by the relative prices of DSL versus cable modem service at the time they actually made their purchase decision *because there was no price decision to be made*. Commenters in this proceeding have provided ample support for the hypothesis that once an early adopter has subscribed to a particular technology, the customer is unlikely to switch technologies solely on the basis of relative price changes alone. Once

having made the choice, there is considerable inertia preventing migration merely because a second and possibly lower priced alternative had subsequently become available.⁹⁸ Among other things, the consumer often is required to sign a service agreement for a minimum time period and/or is required to purchase equipment (a DSL modem or a cable modem) *specific to the broadband service that was selected*.

Investment in the installation process in terms of time already lost and the possibility of considerable downtime during “change over” also acts as a deterrent to service provider and/or technology substitutions. Of possible significance, too, might be the need to alter user email addresses to conform to the new Internet service provider.

- Second, because only the price of the service that was affirmatively chosen by the individual is available for each respondent, Crandall and Sidak infer the prices of either the cable modem or DSL service using “the typical price charged by the RBOC (for DSL) and incumbent cable provider (for cable modem service) in the geographic area where the consumer is located.”⁹⁹ It appears that the price imputed is the average price for the fourth quarter of 2000 and first quarter of 2001. However, this may not represent the actual prices faced by the respondents *when making their original choice (if any) between technologies in the first place*. Again, it does not appear that the survey data or the study accounts for the time period in which the respondent originally subscribed to

98. See EarthLink, at 16-17.

99. Crandall/Sidak Declaration, at para. 131.

the particular service. Thus, Crandall/Sidak may have inferred prices on respondents that do not represent the actual price facing the respondent at their original time of purchase.

- Third, it is possible, indeed, probable, that some portion of the respondents to such surveys are unaware that they have access to both DSL and cable modem services. If so, the respondents in this study may have unknowingly excluded themselves from the study because they lacked knowledge of alternatives in the broadband service marketplace. It appears that Crandall/Sidak's study relied upon the TNS Telecoms survey question that asks respondents "whether DSL and/or cable modem access is available in his or her neighborhood"¹⁰⁰ for the determination of technology overlap. If this is in fact the case, the model has been defined so as to select those respondents who most likely exhibit high demand elasticity for inclusion in the study. In other words, it is quite possible that respondents that chose DSL or cable modem service for reasons other than price may not even be aware that one or the other service is now available to them or was always available. Alternatively, these respondents may have selected a particular technology (such as DSL) on the basis of features other than price (such as security) irrespective of whether or not cable modem service is also available in their area because they never saw any reason to inquire as to its availability. These respondents would thus demonstrate relatively inelastic demand, and would have already been separated from those with highly elastic demand ("price shoppers") before the logit model is even run!

100. *Id.*, at para. 64.

48. Perhaps most troubling is the fact that the Crandall/Sidak study is based upon the untested assumption that DSL and cable modem service are in fact substitutable. The nested logit model employed by Crandall/Sidak first examines factors influencing consumer choices as among no Internet access, narrowband access, and broadband access on the basis of income, education, gender and age. For those consumers who do subscribe to broadband services, the nested logit analysis then examines the choice as between DSL and cable modem solely on the basis of price. This is the crux of the problem with the study, because it rests on the assumption that the choice between subscribing to DSL and cable modem service rests *solely on the relative prices of the technologies*, and Crandall/Sidak have made no attempt to test this assumption by including other variables in the second stage of the nested logit. Thus, the analysis ignores entirely many other factors influencing consumer choices, such as whether the household even owns a PC, whether the user currently has a second phone line for dial-up Internet use, whether the consumer uses his/her computer for business purposes (e.g., home business, telecommuting, etc.) and, again, whether *at the time that the consumer actually made the decision as between DSL and cable both were even available*.

49. Furthermore, Crandall/Sidak make no attempt to model the cross-price elasticity of “broadband” services (DSL and cable modem) vis-a-vis 56 kbps dial-up Internet access. As AT&T declarant Dr. Robert Willig notes, “the econometric study relied upon by Crandall and Sidak confirms that most customers continue to regard narrowband and broadband services as

close demand substitutes and will choose between them based on relative prices.”¹⁰¹ Had Crandall/Sidak chosen to include dial-up Internet access in the “second step” of the model, the conclusions drawn might be quite different. In fact, an econometric study by Kridel, Rappoport, and Taylor, to which Crandall and Sidak refer, concludes that “the demand for on-line access is highly inelastic ... in the upper range of local usage elasticities.”¹⁰² Finally, the Rappoport *et al* study that Crandall/Sidak claim to “update”¹⁰³ found a “significant cross-price effect” between DSL and dial-up in areas where cable was not available and that ADSL, cable modem and dial-up access were all found to act as substitutes.¹⁰⁴ Whether or not this is in fact the case, the Crandall/Sidak study didn’t even address, let alone “update,” this relationship.

50. If price were the only factor influencing a consumer’s decision, then these alternative technologies would be perfect substitutes. The cross-price elasticity presented by Crandall/Sidak shows that even in the residential market, DSL and cable modem services are not considered perfect substitutes. In fact, a Strategic Policy Research paper filed with Qwest’s comments notes

101. AT&T Comments, Attachment A, Declaration of Robert Willig (“*Willig Declaration*”), at para. 22.

102. Paul Rappoport, Don Kridel, and Lester Taylor, “An Econometric Study of the Demand for Access to the Internet,” in *The Future of the Telecommunications Industry: Forecasting and Demand Analysis*, D.G. Loomis and L.D. Taylor, eds., Kluwer Academic Publishers, 1999, at 39.

103. Crandall/Sidak Declaration, at paras. 63-64.

104. Willig Declaration, at para. 125, citing Paul Rappoport, Don Kridel, Lester Taylor and Kevin Duffy-Demo, *Residential Demand for Access to the Internet*, University of Arizona Working Paper, Spring 2001.

that when consumers choose between Internet access technologies, “86 percent of users cite ‘speed of performance’ as the key choice-determining factor, followed by the technology’s reputation and (only) then price.”¹⁰⁵ The Competitive Telecommunications Association (“CompTel”) observes that marketing materials for cable modem and DSL support the notion that providers “compete on [the basis of] non-price characteristics” such as “realized speeds.”¹⁰⁶ By ignoring entirely all of these critically important factors, the Crandall/Sidak study teaches nothing at all about the other factors that actually influenced the purchase decisions of the consumers for whom they had data, and thus reaches misleading conclusions relative to the price elasticities confronting that tiny subset (12%) of all consumers that was studied. Thus, the Crandall and Sidak price elasticity study deserves zero weight and must be discounted and disregarded in its entirety.

51. Additionally, neither Crandall/Sidak, SBC, nor any other commenting party has offered a shred of evidence regarding the elasticity of demand for DSL (the relevant product market) for consumers *that do not confront intermodal competition at all*. In fact, ample evidence has been provided to support the notion that the demand for DSL service itself is *price inelastic* regardless

105. Qwest Comments, Attachment A, John Haring and Harry M. Shooshan, “ILEC Non-Dominance in the Provision of Retail Broadband Services,” at 6.

106. CompTel Comments, at 12. CompTel cites Verizon’s marketing materials that differentiate DSL from cable modem services stating that cable modem speeds during peak hours are often slower than DSL because cable modem’s often share bandwidth with other cable modem’s in a neighborhood and that this is “particularly problematic in the upstream direction, because cable’s upstream capacity is already limited.” *Id.*

of the availability of other means of Internet access. As Crandall/Sidak themselves concede, prices for Verizon DSL service increased 25% in May 2001, from about \$40 to \$50.¹⁰⁷ The TeleChoice survey data discussed earlier indicate that since the time of Verizon's DSL price increases, ILECs as a group have increased their market share over CLECs from 84% as of June 2001 to 88% as of December 2001, and that overall ILEC sales of DSL service have increased by over one million lines in that same time period.¹⁰⁸ It appears that price increases have been common among the incumbent LECs, and this has had little impact upon their ability to increase market share — a result that is certainly not indicative of a fully competitive market. WorldCom notes that “[i]n the past, the Commission has viewed declining prices as an indicator that the market at issue was becoming more competitive. Prices for advanced services are not declining. In fact, SBC has actually been *increasing* prices for advanced services.”¹⁰⁹ CompTel contends that SBC has failed to provide any evidence that these price increases have been unprofitable to DSL providers or that customers have switched to cable modem services as a result.¹¹⁰ Increases in market share following increases in price demonstrate that either the demand for DSL services is inelastic, or the level of elasticity of demand that currently exists is insufficient to constrain prices in and of itself. As Sprint observes, “the extent to which intermodal competition can control prices depends on how perfectly the substitutability is perceived by customers; if

107. Crandall/Sidak Declaration, at para. 38. As noted by AT&T, SBC and BellSouth also raised instituted similar price increases. AT&T Comments, at 46.

108. See footnote 89, *supra*.

109. WorldCom Comments, at 20.

110. CompTel Comments, at 15.

customers perceive there to be significant product differentiation among services then the ability of one service to control the price of the other is greatly reduced.”¹¹¹

52. In any event, the existence of relatively price-elastic demand is at best a *necessary* condition for evidence of the presence of competition and for concluding that ILECs do not have market power, but it is in no sense a *sufficient* condition. For the reasons stated herein, the own-price elasticity of demand study for DSL services set forth in the Crandall/Sidak Declaration is replete with methodological flaws and unconfirmed assumptions, all of which contribute to the unreliability of the study results. Without a valid price elasticity study, there is no applicable evidence before the Commission that would support a conclusion that mass-market broadband services are price-elastic. Moreover, given that the TNS Telecoms data used in the study only represents *residential* customers anyway, Crandall/Sidak have made no attempt to provide evidence pertaining to demand elasticity in the business market, either for the small/medium size or large business sectors. The price elasticity of demand for DSL can be expected to be much lower (if elastic at all) among business users, given (1) the well-supported lack of substitutability between DSL and cable modem service,¹¹² and (2) the fact that business users tend to view broadband services as a necessary, rather than discretionary, service.¹¹³ Even for those small

111. Sprint Comments, at 7, citing Browning and Zupan, *Microeconomic Theory and Application*, at Chapter 12.

112. Ad Hoc Comments, at 17-19; EarthLink Comments, at 17; Covad Comments, at 15; Time Warner Telecom Comments, at 6; CompTel Comments, at 11.

113. Despite being present for five years, residential broadband service penetration rates are around 5-10%, which is generally indicative of the discretionary nature of the service for this

business customers that do view cable modem service as a substitute for DSL, cable facilities are rarely deployed in business districts and therefore are less likely to be available to businesses than to mass-market consumers.¹¹⁴

The degree to which competitors are dependent upon ILEC services and the fact that formidable entry barriers remain belies SBC's position that supply elasticity in the broadband services market is sufficiently high as to prevent the incumbents from exercising market power.

53. Crandall/Sidak fail to show that there is sufficient supply elasticity (if any) to limit the exercise of ILEC market power in the broadband services market. Supply elasticity generally refers to the extent to which firms are able to expand or contract their output in response to market price and other market conditions. Generally, if firms in the market are able to rapidly adjust their supply — particularly to increase it — in response to a price change, this will tend to limit any one firm's ability to maintain supracompetitive prices. In its *AT&T Reclassification Order*, the FCC focused upon whether the existing competitors had the capacity to expand

customer class. DirecTV Comments, at 15; *Verizon Broadband Fact Report*, at 2. Most mass-market consumers simply choose to use dial up connections with or without second lines instead of broadband connections because the bulk of their Internet use is for general “surfing” and e-mail purposes.

114. Willig Declaration, at para. 20. See also, AT&T Comments, at 41. In fact, the Cahners In-Stat Group found that businesses account for just 5% of all cable modem subscriptions in North America. *Id.*

supply and whether there were barriers to entry for new competitors.¹¹⁵ Crandall/Sidak attempt to show that SBC has met those standards.

54. Interestingly, Crandall and Sidak, and SBC for that matter, focus exclusively on cable modem providers in their discussion of supply elasticity in the mass-market. Significantly, Crandall/Sidak make no effort to discuss supply elasticity in the context of intramodal competition — i.e., as between ILECs and DLECs who provide DSL services utilizing ILEC facilities. In fact, ILECs have total control over the availability of DSL channels to competing retail providers; therefore, such competitors' supply elasticities are at or near zero. EarthLink states that "nothing in the current market dynamics has changed the incumbent LECs' bottleneck control over essential facilities used for the delivery of DSL services — including local loops, central office collocation, OSS, and control over backhaul services (e.g. ATM and Frame Relay) — or the resulting wholesale ADSL services."¹¹⁶ ITAA asserts that "the primary explanation for the weakness of the CLEC sector is the concerted effort by ILECs to deny, delay, and degrade the provision of wholesale service to them."¹¹⁷ As Sprint acknowledged, "[i]ntermodal competition can (in some cases) reduce the likelihood of anticompetitive behavior with regard to *pricing of output*, but not with regard to other forms of anticompetitive behavior."¹¹⁸ Intermodal

115. Crandall/Sidak Declaration, at para. 72; *AT&T Reclassification Order*, at 11 FCC Rcd 3303 ¶ 57.

116. EarthLink Comments, at 30.

117. ITAA Comments, at 9.

118. Sprint Comments, at 6.

competition between the ILECs' DSL services and the cable companies' cable modem services does not limit the ILECs' capacity to leverage market power vis-a-vis other DSL providers. Furthermore, there is zero supply elasticity in areas where no overlap between cable facilities and DSL facilities exist.

55. With respect to the large business market, Crandall/Sidak assert that the “big three IXC and other suppliers of packet-switched services could easily absorb any customers that would choose to leave SBC in response to any attempt to increase its prices.”¹¹⁹ However, Crandall/Sidak ignore the continuing reality that the ILECs maintain bottleneck control of last-mile special access facilities and have the ability to engage in price squeezes. Commenters in this proceeding suggest that such a price squeeze is already commonplace. For example, Dr. Willig for AT&T notes that SBC's analysis that competitors have “substantial excess capacity” in the provision of Frame Relay and ATM services is “faulty” because Crandall and Sidak ignore the fact that the excess capacity to which they cite is with regard to packet switching and intercity backbone capacity, *not in the all important bottleneck: access to local loops and intraLATA transport*. “As to these critical components, the IXCs and CLECs do not have excess capacity, they are dependent on the ILECs.”¹²⁰ Alan Benway, also for AT&T, states that “in almost two-thirds of the markets examined [by AT&T], the ILECs' access charges paid by AT&T to reach the customer premises were higher than the ILEC's retail local ATM access rates. Again, it is

119. Crandall/Sidak Declaration, at para. 117.

120. Willig Declaration, at para. 75.

impossible for AT&T to compete when it is forced to pay more for a necessary input for ATM service than the ILEC itself charges for the entire finished service.”¹²¹

56. Crandall and Sidak acknowledge that the FCC also has examined entry barriers when assessing the elasticity of supply for a market,¹²² yet nowhere do they address this issue with respect to broadband services. Entry barriers for DSL service *are* high, even when provided using ILEC underlying facilities.. Competitive carriers seeking to provide DSL service must establish a local *physical* presence in those areas where the ILEC makes DSL available in order to offer its competing retail service to end users. Establishing a local presence in each and every DSL-enabled wire center is a costly and time-consuming undertaking, and thus limits the ability of CLECs to rapidly expand their supply in response to a change in price. Additionally, as ILECs migrate their DSL services off of copper and onto fiber optic feeder while not affording CLECs sub-loop unbundling or remote terminal access, the CLEC is largely blocked from DSL entry altogether.

121. AT&T Comments, Attachment C, Declaration of Alan Benway, at para. 15.

122. Crandall/Sidak Declaration, at para. 72.

The incumbent LECs have market power due, in part, to their greater resources and size, as well as favorable cost structure.

57. Crandall/Sidak assert that SBC does not “enjoy cost advantages vis-a-vis its competitors that effectively preclude competition.”¹²³ Once again, Crandall/Sidak’s support for their position rests upon an analysis focusing solely upon cable operators. Contentions by Crandall and Sidak that (intermodal) cable competitors are themselves large companies does not diminish ILEC market power in those areas where these alternative services are not available, nor does it address those markets where customers do not find cable modem service to be substitutable for DSL.

58. As discussed in detail below, Crandall/Sidak specifically note that retail prices for DSL and cable modem services have often tended to move in lock-step with one another.¹²⁴ This type of price movement is indicative of a *duopoly* market structure, not the “competitive” market model being posited by Crandall/Sidak and by the ILECs. Thus, to the extent that the apparent ILEC/cable duopoly adjusts prices in lock-step with one another, what is relevant is their *combined* market power rather than the market power of the ILEC standing alone. Indeed, Crandall/Sidak’s “own price elasticity” study assumes that only one of the prices (DSL or cable modem) will change; the already-seriously flawed study provides no insight or conclusions regarding demand elasticity if the prices for both services change concurrently (as

123. *Id.*, at para. 80.

124. *See* paragraph 63, *infra*.

Crandall/Sidak's evidence suggests they do), even assuming that none of the study's other defects were present.

59. Crandall/Sidak state that "the average cost per customer of a large ILEC undertaking a massive DSL deployment is currently \$86 per month per customer."¹²⁵ Crandall/Sidak also note that the cost of deploying cable modem service is also high, a figure they put at roughly \$55 per customer per month.¹²⁶ Interestingly, if the cost data referenced by Crandall/Sidak is accurate,¹²⁷ *it would appear that both of these services are currently being priced at levels that are below cost*, and both ILECs and cable providers will almost certainly lose money on every sale that they make. If costs do exceed revenues for these broadband services, then some form of cross-subsidization is necessarily occurring from other competitive or noncompetitive services. ILECs and large cable operators may have the capability of effectuating such cross-subsidization, but the critical issue being disclosed by this revelation is that small new entrants have virtually no chance of competing on a stand-alone basis either with the ILEC or with the cable system, since they would not have a revenue base from other (monopoly) services available to offset the losses. If the incumbent carriers are in fact able to provide DSL or cable modem service, as the case may be, below their cost on a sustained basis (as would seem to be the case, if one believes

125. Crandall/Sidak Declaration, at para. 80, citing JP Morgan/McKinsey & Company, "Broadband 2001: A Comprehensive Analysis of Demand, Supply, Economics, and Industry Dynamics in the U.S. Broadband Market," April 2, 2001, at Chart 45.

126. *Id.*, at Chart 46.

127. The accuracy of this cost data is questionable, since rather than obtaining this data directly from SBC, Crandall/Sidak refer to third-party sources.

Crandall and Sidak's figures), it is difficult to understand how Crandall and Sidak can in the same breath contend that SBC would be *incapable* of cross-subsidizing its DSL entry with ILEC monopoly service profits. For example, a recent *Wall Street Journal* article quotes Bruce McDowell, a Qwest employee and union official, as stating, "Qwest has been milking the cash cow to keep them in the game... If Qwest didn't have USWest, they'd be in bankruptcy." The article also states, "[Qwest Chief Executive Joseph P. Nacchio] dismisses talk of bankruptcy and says he's 'not ashamed' that USWest is propping up Qwest, saying it's part of his 'long-term strategy.'"¹²⁸ The below-cost pricing reported by Crandall/Sidak provides a clear indication that the incumbent carriers are leveraging their market power in the local exchange market in order to not only gain a foothold, but to expand their reach in the broadband services market.

60. Below-cost pricing also raises red flags with respect to what might happen to prices if the FCC were to conclude that ILECs are non-dominant in the broadband services market. Without tariffing regulations, ILECs would be able (and would be expected) to impose price increases up to or above the level of incremental cost in any market where it believes such price increases could be sustained, i.e., in those markets with little or no intermodal competition. This type of pricing behavior was evident in the special access service market following the FCC's grant of pricing flexibilities in certain markets.¹²⁹ Incumbent LECs could also potentially lower

128. Deborah Soloman, "Bad Connection: How Qwest's Merger with a Baby Bell Left Both in Trouble," *Wall Street Journal*, April 2, 2002, at A1.

129. *In the Matter of Performance Measurements and Standards for Interstate Access Services*, CC Docket Nos. 01-321, Comments of Ad Hoc Telecommunications Users Committee, January 22, 2002, at 3-6.

prices even further below cost in those markets where competition is more evident in an attempt to win market share and discourage intramodal competition. Crandall and Sidak's price/cost relationships indicate that the incumbent LECs are already capable of sustaining a sizable subsidy to DSL service (roughly \$38 per line per month); there is little reason to believe that the substantial revenues brought in from other sources (i.e., vertical services) wouldn't be sufficient to cover additional shortfalls in the DSL market.

61. Again focusing upon the local DSL market, it is without question that ILECs dwarf any of their retail (CLEC) competitors.¹³⁰ Data CLECs remain dependent upon unbundled access to transport and loops from the incumbent.¹³¹ Thus, the incumbent LECs undoubtedly have "greater resources" in that the CLECs are directly dependent upon the incumbents' products such as line sharing and for pricing of their inputs. Even when the ILECs do not dwarf their competitors in terms of size and resources, the ILECs are nonetheless able to engage in price squeezes (as discussed above), conduct that Crandall/Sidak attempt to dismiss as impossible.¹³²

130. As Ad Hoc notes, CLEC market capitalization has fallen approximately 70% since September, 1999. Ad Hoc Comments, at 19.

131. Covad Comments, at 17.

132. Crandall/Sidak Declaration, at para. 94.

V. Even if Crandall/Sidak's broad definition of the relevant product and geographic markets were valid (which it is not), the inescapable conclusion is that DSL and cable modem service represent a duopoly that, taken as a whole, does not come even close to satisfying the four-pronged market power standard.

62. Crandall/Sidak's "all broadband services" definition of the relevant product market and expansive definitions of the relevant geographic market, if valid, would still not support a finding that the broadband services market is "competitive." Rather, it would lead to the inescapable conclusion that the market is dominated by only two services that are provided (in the vast majority of cases) by only two firms.¹³³ Duopoly markets, where two large firms carve up all of the demand, tend to behave like monopolies, not like competitive markets. When addressing each of the four parts of the FCC's test for market power, Crandall/Sidak look solely to the presence of cable modem operators as support for their claim that ILECs do not dominate this market. No CLEC DSL providers or even any satellite or fixed wireless carriers are cited by Crandall and Sidak as having (1) any demonstrable market share; (2) any impact on demand elasticity; (3) any impact on supply elasticity; and (4) comparable cost structures, size and resources as compared to incumbent LECs.

63. Crandall/Sidak also report that cable modem service prices have risen as well, largely in lock-step with DSL prices. Crandall and Sidak note that:

133. Crandall and Sidak claim that there are more than one dozen providers of cable modem service. *Id.*, at para. 43. What Crandall/Sidak fail to point out is that head-to-head competition between cable operators exists in very few markets. Thus, in a given incumbent LECs territory, the incumbent LEC likely faces only one competitor in each local market for broadband services.

According to ARS Broadband Provider Tracking Service, AT&T charged \$39.95 per month for cable modem service from August 2000 through May 2001, raised its prices to \$45.95 in June 2001, and raised its prices once in July 2001 to 50.61. In a similar fashion, Verizon charged its DSL customers \$39.95 per month from July 2000 through April 2001, and raised its monthly price to \$49.95 in May 2001.¹³⁴

Crandall/Sidak acknowledge that “the prices for cable modem access and DSL access appear to move together,”¹³⁵ and further state that the Commission “has recognized the similarity in pricing between broadband alternatives.”¹³⁶ Not only does this show that prices are moving in lock-step, it also confirms that, in fact, incumbent LECs have been able to “profitably” raise prices.¹³⁷ Thus, even if DSL and cable modem services were shown to be “competitive” with one another,¹³⁸ the available evidence demonstrates that at best there exists a cartel-like duopoly whereby the two players in each market do not compete against each other on the basis of price. WorldCom agrees, stating, “[t]hese price increases indicate that an incumbent/cable provider

134. *Id.*, at para. 38.

135. *Id.*

136. *Id.*

137. That is, price increases have been sustainable, which means the increases did not lead to a significant enough reduction in demand to make the price increase unprofitable. Indeed, as noted above, demand for DSL services and ILEC DSL market share have both increased following these price increases.

138. As discussed earlier, while DSL and cable modem may be regarded as substitutes for some portion of users in some markets, the evidence clearly shows that cable modem and DSL services are not perfect substitutes throughout the so-called “mass market.”

duopoly is developing for residential Internet access services provided over broadband facilities.”¹³⁹

64. Crandall/Sidak’s ultimate conclusion that ILECs do not possess market power despite the fact that they operate in a market *which according to their own definitions is found to be duopolistic* is at odds with economic theory. A duopoly is a market in which there exists just two sellers of a product.¹⁴⁰ As opposed to a perfectly competitive market, each seller is “sufficiently large in relation to the market so that his actions will have noticeable effects upon his rivals.”¹⁴¹ In the case of a duopoly, a change in output by one seller will have an effect upon the price both sellers receive for the good. Profit maximization on the part of an individual firm is not possible, because that firm must take into account the reaction of the (one) competitor to any price or output change.¹⁴² Crandall/Sidak’s portrayal of competition in the broadband market fits this description: The product is “broadband” internet access effectively consisting of the choice between the incumbent LEC’s DSL service or the cable company’s cable modem service. Economic theory allows for duopolistic profits even in a market containing

139. WorldCom Comments, at 21.

140. Much of the following discussion of economic theory applies equally to an oligopoly, or a market that contains more than two firms, but sufficiently few as to still allow for a monopolistic outcome.

141. James M. Henderson and Richard E. Quandt, *Microeconomic Theory: A Mathematical Approach*, 3rd ed., McGraw-Hill, Inc., 1980, at 199.

142. *Id.*, at 199

differentiated products — much like the broadband market described by Crandall/Sidak. In such a case, the duopolists' profits will also depend upon the advertising expenditures by the firms. If such advertisements are effective (by say, convincing consumers that DSL is better than cable modems because the realized speed is always high and independent of whether one's neighbor is surfing the Internet at the same time) then the firm can sell a larger quantity at the given price or a given quantity at a higher price.¹⁴³ When the duopolists recognize the realities of the market, they may arrive at a situation in which one rival assumes the role of leader and one of follower.¹⁴⁴

65. Price leadership is a form of implicit collusion in a market characterized by duopoly or oligopoly that solves the problem that firms have relative to agreement regarding pricing and production levels when cost and demand factors are constantly changing.¹⁴⁵ Thus, one firm takes the role of leader and one (or more in the case of an oligopoly) follows. The leader will set the price based upon whether the second firm is expected to match price and restrain production (such that market shares will stay the same) or instead, produce more at the higher price.¹⁴⁶ If the price leader is a dominant firm, it will set a price that maximizes its profits and other firms will

143. *Id.*, at 209.

144. *Id.*, at 226. See also, Hal R. Varian, *Microeconomic Analysis*, 3rd ed., W.W. Norton & Company, 1992, at 298-300.

145. Collusion between firms can only legally occur implicitly, not explicitly.

146. Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, Macmillan Publishing Company, 1989, at 445.

follow by producing what they want at the given price.¹⁴⁷ In the end, if demand is relatively inelastic and there is little threat of entry (or successful entry) by competitors, the existing firms in the market can earn monopoly profits if prices are set “cooperatively.”¹⁴⁸ These kind of lock-step pricing movements, similar to the ones described above and acknowledged by Crandall/Sidak for DSL and cable modem services, are not unlike the ILECs’ frequent portrayal of “big three” IXC¹⁴⁹ pricing practices as being oligopolistic.¹⁵⁰ However, those “big three” IXCs together control only 65% of the total LD market,¹⁵¹ whereas DSL and cable collectively control

147. Pindyck and Rubinfeld, at 445.

148. Pindyck and Rubinfeld, at 469.

149. The “big three” are AT&T, MCI WorldCom and Sprint.

150. On numerous occasions, the Bells have sought to portray the long distance market as oligopolistic, which implies the presence of market power by one or all firms, based upon the assertion that the “Big Three” long distance carriers have consistently raised rates in concert with one another despite the fact that no single carrier is considered to be dominant in the market. See, e.g., Paul W. MacAvoy, *The Failure of Antitrust and Regulation to Establish Competition in Long-Distance Telephone Service*, The AEI Press and MIT Press, 1996; *Affidavit of Paul W. MacAvoy on Behalf of Ameritech Michigan*, 1st Michigan Application (FCC Docket No. 97-137, filed January 2, 1997, application dismissed without prejudice February 12, 1997), Vol. 3.4; *Statement of William E. Taylor, Ph.D.*, in Support of Bell Atlantic — Maryland 271 Application, Filed with the Maryland PSC, March 14, 1997; *Affidavit of Jerry A. Hausman*, South Carolina Application (FCC Docket No. 97-208) Appendix A, Tab 5, September 30, 1997. Critics often easily rebut this argument, as the analysis typically track “rack rate” prices rather than the effective per-minute rates for long distance service following the application of discounts or subscriptions to calling plans. See ETI Report, “The ‘Connecticut Experience’ With Telecommunications Competition -- A Case Study In Getting It Wrong,” February, 1998, available at http://www.econtech.com/library/research_reports.htm.

151. As of year end 2000. FCC, Industry Analysis Division, *Trends in Telephone Service*, August 2001, at Table 10.9: Share of Total Toll Service Revenues - All Long Distance Providers.

nearly 100% of the broadband access market (as defined by Crandall and Sidak) where both are offered.¹⁵²

66. Duopoly/oligopoly theory does not require that the firms charge the exact same price for their products, only that when one firm raises prices the other will follow. Areeda and Kaplow note that for oligopolies to be successful, the firms must be able to compare its prices with the other firm easily, but that “if products differ in quality, there must be some understood relationship between them so that consensus is possible on appropriate price differentials between different products.”¹⁵³ Thus, even though cable modem and DSL prices are not exactly the same, the relative prices of the products have been maintained through lock-step price increases while the cable companies and ILECs have continued to compete on the basis of other factors:

152. Verizon *Broadband Fact Report*, Figure 1.

153. Phillip Areeda and Louis Kaplow, *Antitrust Analysis: Problems, Text, and Cases*. 4th ed., Little, Brown and Company, 1988, at 278.

. . . In principle, oligopolists could agree on these factors as well and behave in every respect as would a monopolist. In practice, such coordination will often be impossible, both in cartels and among firms coordinating tacitly. To hold price above competitive levels creates a powerful incentive for each oligopolist to win increased business by any means that will not bring the whole price structure down. And unlike a price cut that can be exactly and quickly duplicated by rivals, effective advertising or product alteration might be beyond imitation, or at least might be copied or offset by rivals only with considerable difficulty and delay . . . Thus, firms may be sufficiently few in number to coordinate prices at noncompetitive levels through interdependence and yet may compete vigorously on other matters ... The resulting nonprice competition might drive costs up to the point where the oligopolists do not earn high profits, notwithstanding prices exceeding the competitive level.¹⁵⁴

The theory of the duopoly still applies even as the firms are expanding capacity. In that case, the firm is concerned with maintaining a fixed share of the market and is less concerned with short-run profits, but instead is concerned with “the long-run advantages that are derived from maintaining a given market share.”¹⁵⁵

67. The fact remains that a duopoly is not sufficient to ensure a competitive outcome and in fact ensures precisely the opposite. The FCC has in the past created duopolies as a means to obtain some competition (e.g., 800 MHz cellular), only to later conclude that two incumbents were simply not sufficient to make a market competitive.¹⁵⁶ Experience in the wireless market

154. Areeda and Kaplow, at 282-283.

155. Henderson and Quandt, at 209.

156. *In The Matter Of Interconnection And Resale Obligations Pertaining To Commercial Mobile Radio Services*, 17 Communications Reg. (P&F) 518, para 69 (1999), noting that “competition continues to be a ‘work in progress,’ as the marketplace evolves from the tight

confirms that actual price competition did not develop until there were 5-6 providers in each market, which did not occur until the 2 GHz PCS licenses were auctioned off.¹⁵⁷

68. Each firm in a duopoly has market power. Hence, even if Crandall/Sidak's portrayal of SBC's DSL as representing only 30% of the "broadband" market with cable accounting for the remaining 70% were correct, such "facts" provide no basis for the Commission to find that SBC or any other ILEC does not have market power with respect to DSL services.

VI. By virtue of their control over essential "last mile" facilities, ILECs dominate the intraLATA large business broadband market, and can be expected to dominate the interLATA market once authority to provide such services is granted.

69. Crandall and Sidak define the relevant product market for larger business broadband services as being comprised primarily of packet-switched frame relay and asynchronous transfer mode ("ATM") services, contending that (1) the services serve the same function from the customer's viewpoint; (2) customers view these services as substitutes to one another; (3) providers view these services as substitutes for one another; and (4) the services are generally

duopoly that prevailed only a few years ago to a state of full competition, which we anticipate will prevail in a few years."

157. *Amendment of the Commission's Rules To Establish New Personal Communications Services*, Memorandum Opinion and Order, 9 FCC Rcd 4957, 4978 ¶ 52 (1994). The FCC initiated PCS license auctions on December 5, 1994. See Broadband PCS Fact Sheet, available at <http://wireless.fcc.gov/pcs/bbfctsh.html> (accessed April 19, 2002).

priced in a similar manner.¹⁵⁸ As with residential and small business, Crandall/Sidak assert that the relevant geographic market is also the ILEC's entire service territory, which thus incorporates both intraLATA and interLATA service markets, based upon their contention that it is appropriate to aggregate all of the distinct point-to-point markets for which "customers fac[e] similar choices regarding a particular relevant product or service in the same geographic area."¹⁵⁹ Crandall and Sidak then apply the FCC's four-pronged market power test (market share, demand and supply elasticity, and comparative cost structure, size and resources), and conclude that ILECs do not maintain market power in the larger business broadband services market.

70. It is reasonable to include frame relay and ATM service in the same product market. It is not reasonable, however, to conclude that the relevant geographic market is the entire ILEC region, for the same reason that it was an inappropriate definition with respect to mass market broadband services. The nature of broadband service for mass market and larger business customers is identical: These services are nothing other than point-to-point connections, providing connectivity between individual customer premises and the Internet or other geographically dispersed network. But again, it is those *access connections* that are at issue here, *not the Internet*, and the ILECs continue to maintain significant control of the bottleneck "last mile" facilities to the customer premises. Thus, the geographic market for larger business broadband services is local.

158. Crandall/Sidak Declaration, at paras. 96-100.

159. *SBC/Ameritech Order*, 14 FCC Rcd 14712, 14746-47 ¶ 69.

71. Moreover, the contention that every point-to-point market offers customers identical competitive choices (thus allowing for an aggregation of said markets when assessing market power) has in no way been demonstrated by SBC or any other ILEC. In point of fact, just the opposite is true. As AT&T points out, the Commission has already determined that “competition in the provision of ‘last mile’ high-capacity loops and transport that are an essential input in providing retail large business data services may vary materially from one locale to the next.”¹⁶⁰ Given that ILECs can and do exert market power in those markets where they control essential facilities and inputs to retail services,¹⁶¹ it would be unreasonable to permit a blanket designation of non-dominance for large business broadband services, such as that being sought by SBC and other ILECs. Any assessment of non-dominance in the provision of these services must therefore be conducted on a case-by-case basis at the local level.

72. More importantly, the Crandall/Sidak definition of the geographic market, and their corresponding market share calculation of 12%-16% for frame relay and ATM services,¹⁶² includes many interLATA markets in which RBOCs have not yet received Section 271 authority to provide services. When calculating ILEC market share over this inappropriately defined area,

160. AT&T Comments, at 23, citing *Access Charge Reform, Price Cap Performance Review of Local Exchange Carriers, Interexchange Carrier Purchases of Switched Access Services Offered by Competitive Local Exchange Carriers, Petition of US West Communications, Inc., for Forbearance from Regulation as a Dominant Carrier in the Phoenix, Arizona MSA*, Fifth Report and Order and Notice of Proposed Rulemaking, 14 FCC Rcd. 14221, ¶¶ 71-76 (1999).

161. *Notice*, at paras. 28-29.

162. Crandall/Sidak Declaration, at paras. 110-112.

Crandall and Sidak water-down the end result by including in the calculation markets in which the RBOCs are by law excluded! ILEC market power becomes evident when one examines the market share for large business data services *in those markets where the ILECs are allowed to compete*. AT&T declarant Willig presented such a calculation, and concluded that incumbent LEC market share is 92% and 96% in the “local” frame relay and ATM markets, respectively,¹⁶³ which is a far cry from the 12%-16% market share figures held up by Crandall and Sidak.

73. IntraLATA market dominance by ILECs for large business broadband services should come as no surprise, since ILECs control the “last mile” special access network facilities that are required by competing carriers to connect with their retail customers. Maintaining control over these special access facilities provides ILECs with the incentive and ability to effect price and non-price discrimination against competitors,¹⁶⁴ and any grant of non-dominance while this market power is still in place will only serve to ensure eventual ILEC dominance in the interLATA broadband services market as well.

VII. ILECs retain market power in mass market and large business broadband services, and thus should continue to be treated as dominant providers.

74. SBC seeks to convey ILEC non-dominance in these markets by incorrectly defining the relevant product and geographic markets for broadband services. Other than *asserting* that the

163. AT&T Comments, at 25.

164. *See* AT&T Comments, at 31-36.


“broadband” market is competitive, no other ILEC or other commenting party provides additional hard or credible evidence to support SBC’s claim that ILECs do not maintain market power in the provision of broadband services. When properly defined, it is clear that ILECs do in fact dominate the broadband services market, both for mass market and larger business customers.

75. For mass market broadband services, the relevant product market is DSL, and the relevant geographic market is local. ILECs have market power in the mass market because (a) there are many situations in which DSL is the only “high-speed” service available; (b) where cable modem service is available the two incumbents (ILEC and cable) operate as duopoly and move their prices in tandem, and (c) ILECs control nearly 100% of dial-up Internet access second line market, and have strong incentive to manage the migration to DSL so as not to undermine the second line revenue stream or leave second line facilities idle.

76. For the larger business market, the relevant product market is frame relay and ATM service, and the relevant geographic market is the local intraLATA market. ILECs have market power in the larger business market based upon (a) the overwhelming market share they hold for intraLATA frame relay and ATM service; and (b) their control over “last-mile” essential facilities required by other carriers to serve retail end users.

77. ILECs clearly have market power in both the mass market and larger business broadband services market. As such, there is no sound basis for concluding that ILECs are non-dominant in the provision of these services.

The foregoing statements are true and correct to the best of my knowledge, information and belief.



LEE L. SELWYN

Attachment 1

Statement of Qualifications

DR. LEE L. SELWYN

Dr. Lee L. Selwyn has been actively involved in the telecommunications field for more than twenty-five years, and is an internationally recognized authority on telecommunications regulation, economics and public policy. Dr. Selwyn founded the firm of Economics and Technology, Inc. in 1972, and has served as its President since that date. He received his Ph.D. degree from the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology. He also holds a Master of Science degree in Industrial Management from MIT and a Bachelor of Arts degree with honors in Economics from Queens College of the City University of New York.

Dr. Selwyn has testified as an expert on rate design, service cost analysis, form of regulation, and other telecommunications policy issues in telecommunications regulatory proceedings before some forty state commissions, the Federal Communications Commission and the Canadian Radio-television and Telecommunications Commission, among others. He has appeared as a witness on behalf of commercial organizations, non-profit institutions, as well as local, state and federal government authorities responsible for telecommunications regulation and consumer advocacy.

He has served or is now serving as a consultant to numerous state utilities commissions including those in Arizona, Minnesota, Kansas, Kentucky, the District of Columbia, Connecticut, California, Delaware, Maine, Massachusetts, New Hampshire, Vermont, New Mexico, Wisconsin and Washington State, the Office of Telecommunications Policy (Executive Office of the President), the National Telecommunications and Information Administration, the Federal Communications Commission, the Canadian Radio-television and Telecommunications Commission, the United Kingdom Office of Telecommunications, and the Secretaria de Comunicaciones y Transportes of the Republic of Mexico. He has also served as an advisor on telecommunications regulatory matters to the International Communications Association and the Ad Hoc Telecommunications Users Committee, as well as to a number of major corporate telecommunications users, information services providers, paging and cellular carriers, and specialized access services carriers.

Dr. Selwyn has presented testimony as an invited witness before the U.S. House of Representatives Subcommittee on Telecommunications, Consumer Protection and Finance and before the U.S. Senate Judiciary Committee, on subjects dealing with restructuring and deregulation of portions of the telecommunications industry.

In 1970, he was awarded a Post-Doctoral Research Grant in Public Utility Economics under a program sponsored by the American Telephone and Telegraph Company, to conduct research on the economic effects of telephone rate structures upon the computer time sharing industry. This work was conducted at Harvard University's Program on Technology and Society,

where he was appointed as a Research Associate. Dr. Selwyn was also a member of the faculty at the College of Business Administration at Boston University from 1968 until 1973, where he taught courses in economics, finance and management information systems.

Dr. Selwyn has published numerous papers and articles in professional and trade journals on the subject of telecommunications service regulation, cost methodology, rate design and pricing policy. These have included:

“Taxes, Corporate Financial Policy and Return to Investors”
National Tax Journal, Vol. XX, No.4, December 1967.

“Pricing Telephone Terminal Equipment Under Competition”
Public Utilities Fortnightly, December 8, 1977.

“Deregulation, Competition, and Regulatory Responsibility in the Telecommunications Industry”
Presented at the 1979 Rate Symposium on Problems of Regulated Industries - Sponsored by: The American University, Foster Associates, Inc., Missouri Public Service Commission, University of Missouri-Columbia, Kansas City, MO, February 11 - 14, 1979.

“Sifting Out the Economic Costs of Terminal Equipment Services”
Telephone Engineer and Management, October 15, 1979.

“Usage-Sensitive Pricing” (with G. F. Borton)
(a three part series)
Telephony, January 7, 28, February 11, 1980.

“Perspectives on Usage-Sensitive Pricing”
Public Utilities Fortnightly, May 7, 1981.

“Diversification, Deregulation, and Increased Uncertainty in the Public Utility Industries”
Comments Presented at the Thirteenth Annual Conference of the Institute of Public Utilities, Williamsburg, VA - December 14 - 16, 1981.

“Local Telephone Pricing: Is There a Better Way?; The Costs of LMS Exceed its Benefits: a Report on Recent U.S. Experience.”
Proceedings of a conference held at Montreal, Quebec - Sponsored by Canadian Radio-Television and Telecommunications Commission and The Centre for the Study of Regulated Industries, McGill University, May 2 - 4, 1984.

“Long-Run Regulation of AT&T: A Key Element of A Competitive Telecommunications Policy”
Telematics, August 1984.

“Is Equal Access an Adequate Justification for Removing Restrictions on BOC Diversification?”
Presented at the Institute of Public Utilities Eighteenth Annual Conference, Williamsburg, VA - December 8 - 10, 1986.

“Market Power and Competition Under an Equal Access Environment”
Presented at the Sixteenth Annual Conference, “Impact of Deregulation and Market Forces on Public Utilities: The Future Role of Regulation”
Institute of Public Utilities, Michigan State University, Williamsburg, VA - December 3 - 5, 1987.

“Contestable Markets: Theory vs. Fact”
Presented at the Conference on Current Issues in Telephone Regulations: Dominance and Cost Allocation in Interexchange Markets - Center for Legal and Regulatory Studies Department of Management Science and Information Systems - Graduate School of Business, University of Texas at Austin, October 5, 1987.

“The Sources and Exercise of Market Power in the Market for Interexchange Telecommunications Services”
Presented at the Nineteenth Annual Conference - “Alternatives to Traditional Regulation: Options for Reform” - Institute of Public Utilities, Michigan State University, Williamsburg, VA, December, 1987.

“Assessing Market Power and Competition in The Telecommunications Industry: Toward an Empirical Foundation for Regulatory Reform”
Federal Communications Law Journal, Vol. 40 Num. 2, April 1988.

“A Perspective on Price Caps as a Substitute for Traditional Revenue Requirements Regulation”
Presented at the Twentieth Annual Conference - “New Regulatory Concepts, Issues and Controversies” - Institute of Public Utilities, Michigan State University, Williamsburg, VA, December, 1988.

“The Sustainability of Competition in Light of New Technologies” (with D. N. Townsend and P. D. Kravtin)
Presented at the Twentieth Annual Conference - Institute of Public Utilities Michigan State University, Williamsburg, VA, December, 1988.

“Adapting Telecom Regulation to Industry Change: Promoting Development Without Compromising Ratepayer Protection” (with S. C. Lundquist)
IEEE Communications Magazine, January, 1989.

“The Role of Cost Based Pricing of Telecommunications Services in the Age of Technology and Competition”
Presented at National Regulatory Research Institute Conference, Seattle, July 20, 1990.

“A Public Good/Private Good Framework for Identifying POTS Objectives for the Public Switched Network” (with Patricia D. Kravtin and Paul S. Keller)
Columbus, Ohio: *National Regulatory Research Institute*, September 1991.

“Telecommunications Regulation and Infrastructure Development: Alternative Models for the Public/Private Partnership”
Prepared for the Economic Symposium of the International Telecommunications Union Europe Telecom '92 Conference, Budapest, Hungary, October 15, 1992.

“Efficient Infrastructure Development and the Local Telephone Company’s Role in Competitive Industry Environment” *Presented at the Twenty-Fourth Annual Conference, Institute of Public Utilities, Graduate School of Business, Michigan State University*, “*Shifting Boundaries between Regulation and Competition in Telecommunications and Energy*”, Williamsburg, VA, December 1992.

“Measurement of Telecommunications Productivity: Methods, Applications and Limitations” (with Françoise M. Clottes)
Presented at Organisation for Economic Cooperation and Development, Working Party on Telecommunication and Information Services Policies, ‘93 Conference “*Defining Performance Indicators for Competitive Telecommunications Markets*”, Paris, France, February 8-9, 1993.

“Telecommunications Investment and Economic Development: Achieving efficiency and balance among competing public policy and stakeholder interests”
Presented at the 105th Annual Convention and Regulatory Symposium, National Association of Regulatory Utility Commissioners, New York, November 18, 1993.

“The Potential for Competition in the Market for Local Telephone Services” (with David N. Townsend and Paul S. Keller)
Presented at the Organization for Economic Cooperation and Development Workshop on Telecommunication Infrastructure Competition, December 6-7, 1993.

“Market Failure in Open Telecommunications Networks: Defining the new natural monopoly,” *Utilities Policy*, Vol. 4, No. 1, January 1994.

The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers, (with Susan M. Gately, et al) a report prepared by ETI and Hatfield Associates, Inc. for AT&T, MCI and CompTel, February 1994.

Commercially Feasible Resale of Local Telecommunications Services: An Essential Step in the Transition to Effective Local Competition, (Susan M. Gately, et al) a report prepared by ETI for AT&T, July 1995.

“Efficient Public Investment in Telecommunications Infrastructure”
Land Economics, Vol 71, No.3, August 1995.

Funding Universal Service: Maximizing Penetration and Efficiency in a Competitive Local Service Environment, Lee L. Selwyn with Susan M. Baldwin, under the direction of Donald Shephard, A Time Warner Communications Policy White Paper, September 1995.

Stranded Investment and the New Regulatory Bargain, Lee L. Selwyn with Susan M. Baldwin, under the direction of Donald Shephard, A Time Warner Communications Policy White Paper, September 1995

“Market Failure in Open Telecommunications Networks: Defining the new natural monopoly,” in *Networks, Infrastructure, and the New Task for Regulation*, by Werner Sichel and Donal L. Alexander, eds., University of Michigan Press, 1996.

Establishing Effective Local Exchange Competition: A Recommended Approach Based Upon an Analysis of the United States Experience, Lee L. Selwyn, paper prepared for the Canadian Cable Television Association and filed as evidence in Telecom Public Notice CRTC 95-96, Local Interconnection and Network Component, January 26, 1996.

The Cost of Universal Service, A Critical Assessment of the Benchmark Cost Model, Susan M. Baldwin with Lee L. Selwyn, a report prepared by Economics and Technology, Inc. on behalf of the National Cable Television Association and submitted with Comments in FCC Docket No. CC-96-45, April 1996.

Economic Considerations in the Evaluation of Alternative Digital Television Proposals, Lee L. Selwyn (as Economic Consultant), paper prepared for the Computer Industry Coalition on Advanced Television Service, filed with comments in FCC MM Docket No. 87-268, In the Matter of Advanced

Television Systems and Their Impact Upon the Existing Television Broadcast Service, July 11, 1996.

Assessing Incumbent LEC Claims to Special Revenue Recovery Mechanisms: Revenue opportunities, market assessments, and further empirical analysis of the "Gap" between embedded and forward-looking costs, Patricia D. Kravtin and Lee L. Selwyn, In the Matter of Access Charge Reform, in CC Docket No. 96-262, January 29, 1997.

The Use of Forward-Looking Economic Cost Proxy Models, Susan M. Baldwin and Lee L. Selwyn, Economics and Technology, Inc., February 1997.

The Effect of Internet Use On The Nation's Telephone Network, Lee L. Selwyn and Joseph W. Laszlo, a report prepared for the Internet Access Coalition, July 22, 1997.

Regulatory Treatment of ILEC Operations Support Systems Costs, Lee L. Selwyn, Economics and Technology, Inc., September 1997.

The "Connecticut Experience" with Telecommunications Competition: A Case in Getting it Wrong, Lee L. Selwyn, Helen E. Golding and Susan M. Gately, Economics and Technology, Inc., February 1998.

Where Have All The Numbers Gone?: Long-term Area Code Relief Policies and the Need for Short-term Reform, prepared by Economics and Technology, Inc. for the Ad Hoc Telecommunications Users Committee, International Communications Association, March 1998.

Broken Promises: A Review of Bell Atlantic-Pennsylvania's Performance Under Chapter 30, Lee L. Selwyn, Sonia N. Jorge and Patricia D. Kravtin, Economics and Technology, Inc., June 1998.

Building A Broadband America: The Competitive Keys to the Future of the Internet, Lee L. Selwyn, Patricia D. Kravtin and Scott A. Coleman, a report prepared for the Competitive Broadband Coalition, May 1999.

Bringing Broadband to Rural America: Investment and Innovation In the Wake of the Telecom Act, Lee L. Selwyn, Scott C. Lundquist and Scott A. Coleman, a report prepared for the Competitive Broadband Coalition, September 1999.

Dr. Selwyn has been an invited speaker at numerous seminars and conferences on telecommunications regulation and policy, including meetings and workshops sponsored by the National Telecommunications and Information Administration, the National Association of

Regulatory Utility Commissioners, the U.S. General Services Administration, the Institute of Public Utilities at Michigan State University, the National Regulatory Research Institute at Ohio State University, the Harvard University Program on Information Resources Policy, the Columbia University Institute for Tele-Information, the International Communications Association, the Tele-Communications Association, the Western Conference of Public Service Commissioners, at the New England, Mid-America, Southern and Western regional PUC/PSC conferences, as well as at numerous conferences and workshops sponsored by individual regulatory agencies.